Ensure Clean Healthy Crops of Fruit

By Using

BLYTH'S "BLUE BELL"

Arsenate of Lead

Which is made from Australian Products by Australian Workmen for Australian Orchardists.

Growers are invited to have their own tests carried out to determine the quality of "BLUE BELL"

The popularity of this brand is demonstrated by the fact that after 12 years honored service it has now

The Largest Sale in the Commonwealth and New Zealand

BLYTH'S "BLUE BELL" LIME SULPHUR

Destroys Black Spot, Shot Hole, Curl Leaf, &c. Will not wash off

Don't use inferior brands. *We have the quality.* *Write for information*

SOLE AGENTS

Victoria—Messrs. F. W. Prell & Co., 31 Queen St., Melbourne.

New South Wales—Hopkins & Lipscombe, Fruit Exchange, Sydney.

South Australia—Messrs. George Wills & Co., Grenfell Street, Adelaide.

Western Australia—Messrs. George Wills & Co. Ltd., Murray St., Perth.

Tasmania—Duthoit & Co., Macquarie St., Hobart.

New Zealand—The New Zealand Farmers' Co-operative Distributing Co. Ltd., Allen St., Wellington.

"ELECTRO"

Dry Powder

ARSENATE OF LEAD

This product, long familiar to Australasian fruit men, represents the highest present attainment in the manufacture of spraying material. It combines highest poisoning power with greatest fineness.

Kills All Leaf-Eating Insects

"Electro" is guaranteed to contain at least 30 per cent. arsenic oxide. As a matter of fact, it actually contains approximately 33 per cent. Further, there is only a trace of soluble arsenic—less than 2-3rds of 1 per cent. That is why "Electro" never burns the foliage.

"Electro" mixes instantly with water. Just shake it into the spray tank—no straining required. It is so fine and so mechanically perfect that it stays in suspension a long time. Every leaf gets its fair share of the poison. There need be no unprotected spots where the bugs can propagate.

"Electro" is not ground but is precipitated as a finely divided powder by a process covered by our special patents. So "Electro" will stick to the foliage long after ground arsenates have been washed away.

"Electro" is economical to use. You do not pay freight on needless water, and it will keep until used. Besides, there is a considerable saving in labour because there is no loss from clogged nozzles. Only 1 pound of "Electro" Dry Powder Arsenate of Lead is required for 50 gallons of water.

Manufactured by

Vreeland Chemical Mfg. Co.

Little Falls, N.J., U.S.A.

Distributors for Victoria—

Victorian Orchardists Co-operative Association Ltd.

456 FLINDERS LANE, MELBOURNE

Other Distributors required for—

New South Wales — Queensland
South Australia — West Australia

Write to

Factory Representative,
G.P.O. Box 2123,
SYDNEY, N.S.W.

Cables : Cucumbros London Code : A.B.C., 5th Edition

CHARLES KNIGHTS
LTD.

Fruit Importers, Commission Agents

501, 502 Covent Garden Market, London, W.C.2
95, 97, 99 Commercial St., Spitalfields Market, E.
And at Stratford Market, Eng.

Solicit Consignments of Australian and Tasmanian Apples and Pears

We are in an unequalled Position to handle consignments by PRIVATE TREATY to the best possible advantage for the following reasons:—

WE are the only firm in the Fruit business in London with branches established in the three big Fruit markets of the metropolis.

WE have customers in practically every town of importance in Great Britain, therefore consignors can be assured their produce will be sold where the keenest demand prevails.

WE do not buy from any source whatever, our business being purely a commission one, an important factor which has mainly contributed to the vast increase of our business.

WE would emphasise the importance of consigning direct to the firm who can sell direct to their customers, thereby reducing the expenses in handling to the minimum of necessity.

WE claim the speculator's profit is one that can be obliterated to the advantage of growers and the fruit trade in general, and incidentally, to the consumers, who, after all, are the real customers of the producers.

WE handle fruit from all parts of the world, having upwards of one thousand consignors on our books, and each branch is under the personal supervision of a Director of the Firm.

WE cordially invite the strictest enquiries as to our stability, recognising as we do that growers 12,000 miles away must be ensured before consigning on a commission basis, the firm to whom they are doing so is of sound financial standing.

WE are willing to advance approximately freight and insurance expenses on presentation of Bills of Lading.

WE wish to demonstrate Private Sales have a big advantage over the auction and ensures more stable prices, and proper values.

WE wish to considerably increase our importation of Australian and Tasmanian Apples, which we are confident will be advantageous to the growers and ourselves.

Give us a share of your consignments and compare our results with those you receive from other sources

Consign to

CHARLES KNIGHTS LTD., London

WHOSE INTERESTS ARE IDENTICAL WITH YOUR OWN

Victorian Shippers ship through our Agent—

F. R. MELLOR, 440 Elizabeth St. (near Franklin St.) Melbourne.

Reliable Agents required for Western Australia and Tasmania.

Consign Your Fruit to Hull

Because

Hull is the natural port for shipment to the Continent of Europe as a distributing centre.

Hull is the natural port for fruit and other produce consumed in the Midlands and North of England.

Hull serves a population of 13,000,000 people, over two-and-a-half times as many as in the whole Commonwealth.

The rate of freight from Australasia to **Hull** is the same as to London or any other port in England.

The advantage of sending to **Hull** is that, for fruit consumed in the North and in the area served by **Hull**, you save unnecessary carriage and handling.

Hull Prices for Australasian fruit compare favorably with those of any other market. Intermediate profits are saved.

For Highest Prices and Prompt Returns Consign to

White & Son Ltd.

Fruit Brokers, HULL, Eng.

Established 1837

DIRECTORS: COL. WHITE, C.B.—D.L.
MAJOR DALTON WHITE
MAJOR LAMBERT WHITE, D.S.O.
JOHN W. WHITE
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CABLES: WHITES, HULL

CODES USED
A.B.C. 4th and 5th EDITIONS
WESTERN UNION

FOR PARTICULARS APPLY TO:—

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SOUTH AUSTRALIA: G. W. Selth, Darling Buildings, Franklin Street, Adelaide.
WESTERN AUSTRALIA: Paterson & Co. Ltd., Viking House, Perth.
TASMANIA: H. Jones & Co. Ltd., Hobart.
NEW ZEALAND: J. A. Redpath & Sons Ltd., 181 Cashel Street, Christchurch; 17 Johnston St., Wellington; Hellaby's Bldgs., Queen St., Auckland; and Dunedin.

Where "Vallo Brand" Arsenate of Lead Stands Alone

Use "Vallo" Arsenate of Lead this Spraying

Use "Vallo" Arsenate of Lead this Spraying

1. The Percentage of Water Soluble Arsenic is lower than that of any other Brand of Lead on the Market.
   This means that there is positively no danger of burning the foliage.
2. The Particles are in a finer state of sub-division than any other make.
   This means a more even distribution of Lead over the Trees.
3. Suspension: We claim that the suspension qualities of our 1922 Arsenate of Lead surpass those of any other Lead, and we invite growers to make their own tests.

Therefore, "Vallo" Brand Arsenate of Lead is the best lead the Orchardist can buy, and if used at the right time and in the right way gives the greatest measure of success.

READ WHAT THESE SATISFIED USERS SAY:—

"Having now picked approximately 1,800 cases of my crop, I have no hesitation in stating that the Fruit is freer of Codlin Moth than I have ever had it, the percentage of Moth-marked Apples being very small indeed."
H. N. Wicks, Balhannah, S.A., 22/3/21.

"Notwithstanding the heavy and continuous rain we have experienced there is still a good Coating of Lead on the fruit. At present my own crop of say four or five thousand cases is not showing 2 per cent."
Letter received by Our Sydney Agent.

"I certainly had great luck with the shipment (Apples) I sent to London; it was the biggest shipment ever sent from N.S.W. I used "Vallo-Giraffe" Lime Sulphur this season with great success and "Vallo" Asenate of Lead. The latter keeps in suspension well, and I can still see traces of it, notwithstanding the trees were sprayed at the end of last October. I only sprayed once with Arsenate but can safely say that my losses were not a quarter of a case from a 3,000 case crop."
E. A. Molesworth,
"Ardrossan," Batlow, 13/5/21.

Manufactured in Australia by **A. VICTOR LEGGO & CO.**

MELBOURNE	SYDNEY	BRISBANE
497 Collins Street	7 Hamilton Street	239 Elizabeth Street

AGENTS:

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SYDNEY—F. Chilton, City Fruit Markets
W. AUSTRALIA—Patterson & Co., Perth
QUEENSLAND—Corser & Co., Maryborough; Australasian Fertilisers Co-operative Co. Ltd., Brisbane and at all Seed Merchants and Fruitgrowers' Associations.
TASMANIA—Buchanan, Davidson & Co., Hobart; Field & Co., Devonport; Davidson & French Pty. Ltd., 37 St. John's St., Launceston
N. ZEALAND—Griffin & O'Brien, 89 Hardy St., Nelson; Arthur Simmonds, Ltd., Hastings; Reilly's Central Produce Mart, Moray Place, Dunedin.

Ample Stocks throughout Australia Every Season

Ample Stocks throughout Australia Every Season

Arsenate of Lead

Every other manufacturer refers to Swift's as the Standard of the Line

NEW STOCKS OF SWIFT'S EVERY SEASON

Growers who want the BEST RESULTS and insist on having SWIFT'S should book their orders early.

Every grower knows it is Folly to Plant Inferior Trees.

Price does not count.

Inferior Sprays are dear at any price, and it is folly and waste of money and time to use them.

They Damage Trees secured at great expense and labor, and do not give the Best Results as regards quality and percentage of clean fruit.

SWIFT'S does not damage Trees or Fruit.

SWIFT'S improves Quality and Color of the Crop.

SWIFT'S saves Money and Labor, and because it does not wash or wear off quickly, Growers need not spray so many times as with other materials.

SWIFT'S secures the maximum of Clean Fruit at the minimum of expense of spraying, picking and packing, there being no Grubby Fruit to handle.

"The Grower who sprays thoroughly with SWIFT'S is the man who succeeds."

SWIFT'S ARSENATE OF LEAD

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F. W. Heritage & Co., Hobart and Launceston Tasmania

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The Firm with a reputation for straightforward dealing.
Every effort made to ensure satisfaction to clients.
Prompt and reliable advice—Highest ruling prices—Quick returns.
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The Largest Combined Citrus and Deciduous Fruit Tree Growers in the Southern Hemisphere

Nurseries 200 ACRES
Orchards 300 ACRES

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All Leading Varieties, Clean, Healthy, and Well-Grown

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SPRAY PUMPS For Hand or Engine Power

Suitable for Every Spraying Condition

MYER'S LEVER BUCKET SPRAY PUMP.

No. R324, with Cog Gear Handle. Can be used on Bucket or Barrel, With 1¼ inch Air Chamber. Malleable Foot Rest and Handle. **PRICE, 55/-.**

THE "MYSTO" KNAPSACK SPRAYER.

For Spraying Vines, Fruit Trees, Potatoes, Limewashing, etc. Nothing to get out of order. The Strongest and Best Finished Knapsack Sprayer on the Market. **PRICE, £6/7/6.**

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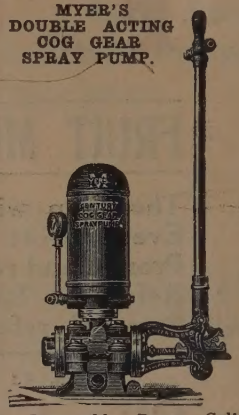
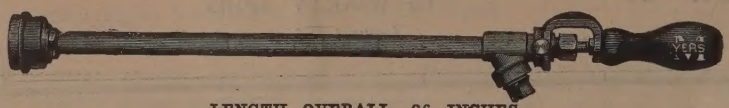


2in. Removable Brass Cylinder x 5in. stroke. Pressure Gauge and Double Discharge. Brass Valves and Ground Bevel Brass Seats. Hemp Packed Plunger. **PRICE, £10/10/.**

Myer's Power Spray Gun



LENGTH OVERALL, 26 INCHES.

Fitted for ¾in. hose coupling or ¼in. pipe

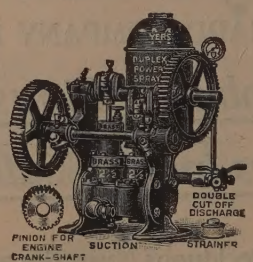
Utilises the entire capacity of any Power Spray Pump, and does away with all extension pipe rods, nozzles and fittings. All working parts on the outside. Not subject to corrosion. **PRICE, £3.**

MYER'S "PERFECT" DOUBLE ACTING BARREL SPRAYER. No. 310.

Has Patent Expanding Plunger. Brass Upper and Brass Lined Lower Cylinder, Brass Bucket, Canvas Packed. Brass Valve Seat and Brass Check Valve. Takes either one or two leads of Hose, and is regularly supplied with Mechanical Agitator.

PRICE, with Mechanical Agitator, Suction Pipe and Strainer, Only £7/-/-.

MYER'S DUPLEX VERTICAL CYLINDER POWER SPRAY PUMP.



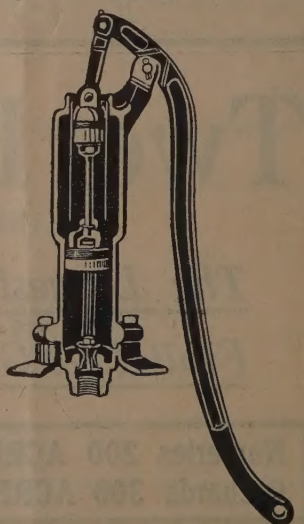
Can be driven by belt direct from Engine crank shaft by means of gear wheel and pinion.

MACHINE CUT GEARS, BACK GEARED, 5 to 1.

2in. Cylinders and 3in. stroke; Brass Valves and Seats, Poppet pattern. Safety relief valve, pressure guage. double cut off and Strainer.

PRICE, £22/-/-

MYER'S DOUBLE ACTING BARREL SPRAYER. No. 300.



Similar in construction to No. 310. Perfect, but with smaller Air Chamber. Extra Air Chamber can be attached to either side of Pump if desired.

PRICE, with Mechanical Agitator, Suction Pipe and Strainer only, £4/15/-

Extra Airchamber, 15/-

Our New Spray Pump Catalogue is Now Ready. Send for Copy now.

SPECIAL NORTH BRITISH SPRAY HOSE, ½ in. x 6 ply, 1/6 per foot

WELCH, PERRIN & CO. Pty. Ltd.

48-56 QUEENSBRIDGE STREET, SOUTH MELBOURNE, Vic.

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Consign your

CITRUS FRUITS

To

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NATIONAL FEDERATION OF FRUIT & POTATO TRADES ASSOCIATIONS INCORPORATED LIMITED
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WE HANDLED THE ENTIRE SHIPMENT OF ORANGES
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THE LARGEST FIRM OF FRUIT SALESMEN IN GREAT BRITAIN

(Established over a Quarter of a Century)

Codes: Marconi, International, and A.B.C. 5th Edition

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SALE BY PRIVATE TREATY ONLY GIVES BEST RESULTS

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WE SUPPLY THE WHOLESALE TRADE. SELLING AGENCIES EVERYWHERE.

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Tasmanian Growers ship through Eric Burgess, G.P.O. Box 253, Hobart

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New Zealand ,, ,, ,, J. G. C. Grimshaw, 54, 56 Lambton Quay, Wellington

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Increased his yield of Washington Navels from

350 CASES

to

1500 CASES

with the aid of

SULPHATE OF AMMONIA

AND

Bone Dust

Mr. Johnson grows **QUALITY** oranges, and will be pleased to verify the above.

Order **Sulphate of Ammonia** now through local dealers, or direct from any of the following producers:—

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Victoria:
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Tasmania:
Hobart Gas Co., Collins St., Hobart.

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South Australian Gas Co., Waymouth St., Adelaide.

Don't WONDER what your crop will be!

MAKE SURE by using

"HARBAS"

The Self-emulsifying Red Oil

"HARBAS" mixes instantly and completely with cold water.

"HARBAS" never shows the least trace of free oil. It does not separate into layers.

"HARBAS" is specially prepared to ensure even distribution. It is the same at the bottom as at the top of he spray vat.

"HARBAS" has great penetrative effects on dormant insects, both in the egg and adult conditions.

"HARBAS" is made of special materials to secure a thick film which does not quickly wash off.

Many Oils LOOK like HARBAS BUT DON'T ACT LIKE IT.

Use "HARBAS" for Reb Spider and all Scale and Aphis Pests.

Use "HARBAS" early, and have your fruit set before the Thrip menace starts.

"BLACK LEAF 40"

(Concentrated Nicotine Sulphate).

The popular remedy for all Aphis Pests.
Supplied in 2lb. and 10lb. tins.
Use 1lb. to 80 gallons of water.

"ELEPHANT"

LIME SULPHUR WASH.

Contains no foreign ingredients, and is always an even strength.
Does not russet the fruit.

"AMAZON"

6-PLY HIGH PRESSURE SPRAY-RESISTING HOSE.

This is the outcome of scientific investigation, and specially made to withstand the various chemicals and other sprays.
Guaranteed to 300lbs. pressure.

F. R. MELLOR,

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CAVE GUANO

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Orchard, Potato and Vine Culture, and Intense Culture of Every Description

FRUIT GROWERS, ORCHARDISTS, VIGNERONS, MARKET GARDENERS

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ARCOOTA GUANO in Grades A. B. C., supplied in 1 cwt., 56 lb, 28 lb. bags. Ton lots in 1 cwt. bags at NO EXTRA CHARGE.

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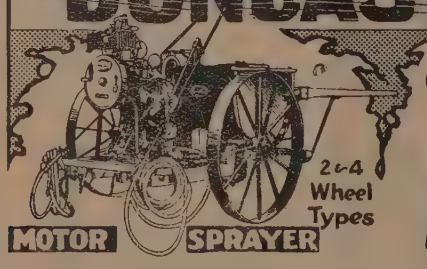
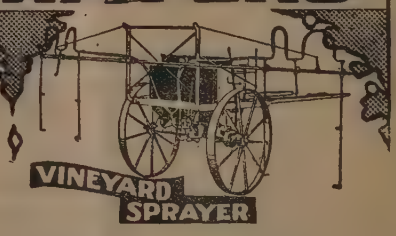
DONCASTER SPRAYERS





Recognised as the standard amongst sprayers High-grade petrol engine, magneto ignition supplies power— absolutely efficient, sturdy and strong. U shaped Vat.

Pumps are strong yet simple, made of cast iron, bushed with gunmetal, mechanical agitator.

Specially constructed low set transport.

The Doncaster Motor Sprayer does twice the work of any hand sprayer at half the cost, and is yours on easy terms and a deposit of £10.

Designed as a result of wide experience among Growers. Suitable for smaller orchards, Pump works with Improved agitator and minimum power. Vat constructed to insure a thorough assimulation of liquid Ground Unions no leather washers. Improved unchokable suction Delivery valves made for spraying with red oil or crude petroleum.

Agitator and pump work off one lever.

Adjustable, easily accessible valves.

4 Sizes Stocked.

Advice on Spraying and Pumping Problems supplied.

Give particulars of your orchard or farm.

No sprayer has met the needs of Vignerons more completely—none could. Will spray 20 acres of vines a day—even and thorough distribution secured. Motion of vehicle propels spray pump. Fitted with 10 spray muzzle can be adjusted for wide or narrow rows. Droppers can be raised when out of action. Driver controls all levers.

Motor driven Vine Sprayers can be supplied as well as all types of Potato Sprayers.

Agents Wanted Everywhere

Langwill Bros & Davies Pty Ltd 110-114 Sturt St. SOUTH MELBOURNE

Get Catalogue of Sprayers.

Sell Your Fruit in London by Private Treaty

and you will receive best price

After all, it is the final average for the season's crop on which the fruitgrower desires to come out right.

Fair value at auction one day does not mean fair value the next, but with private treaty you get consistent results.

The Old Established Firm of—

Nothard, Lowe & Wills Ltd.

Tooley St., London

Offer their Best Services to Australian Fruitgrowers

1. Fruit is brought up to our salesrooms by lighter, not bumped along the road.
2. We obtain speedy delivery.
3. We have a large local connection, also with inland cities and abroad, therefore
4. We get prompt sales—steady, consistent—not a jerky auction market which can be very easily depressed.
5. Our salesrooms have ample space for the proper display of fruit.
6. For very many years past we have served Australian fruitgrowers with satisfaction.

For Full Information Apply to—

VICTORIA: J. B. Mills & Co., 9 Queen St., Melbourne
SOUTH AUSTRALIA: Geo. Wills & Co. Ltd., Adelaide
WESTERN AUSTRALIA { Geo. Wills & Co. Ltd., Perth & Fremantle / Henry Wills & Co., Albany

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GEO. MONRO Ltd.

Fruit Salesmen

Covent Garden Market, London, W.C.2.,

(Established 1862)

THE Company possesses its own freeholds, on which are erected modern commodious warehouses and offices on all sides of the market. It is thus able to display consignments in the manner which good fruit should be displayed to get the best results.

The Company specialises in making every possible endeavour to increase the CONSUMPTION OF FRUIT. The Chairman of the Company is also Chairman of the Fruit Trades Federation Propaganda Committee.

The house of Geo. Monro Ltd. has amongst its customers all the leading buyers in the trade, It can, therefore, AND DOES obtain the best prices.

Advances are made to cover cost of freight, etc.

Last season the Company sold over 200,000 cases of Australian Apples and Pears, and nearly the whole of the Oranges that were shipped from the Commonwealth.

The Company sells on commission only.

DIRECTORS:

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Australian Agent—Capt. H. Dakin, 15 O'Connell Street, SYDNEY, N.S.W.

Victorian Representative - - -	Esmond Russell, 60 Queen Street, Melbourne
Tasmanian Representative - - -	V. Ikin, Dunn Street, Hobart
West Australian Representative - -	R. Wallace, "Wicklow," Mt. Barker, W.A.

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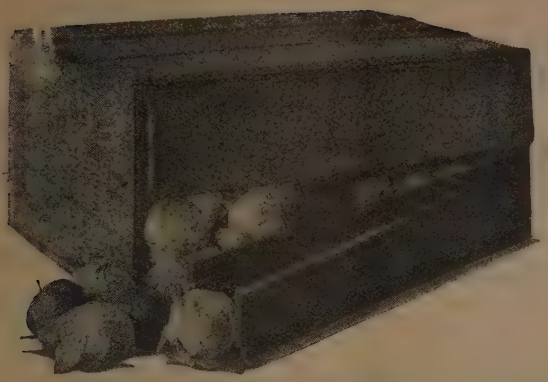

Result of Case Unstrapped

Prevent Pilfering and Breakage of Fruit Cases

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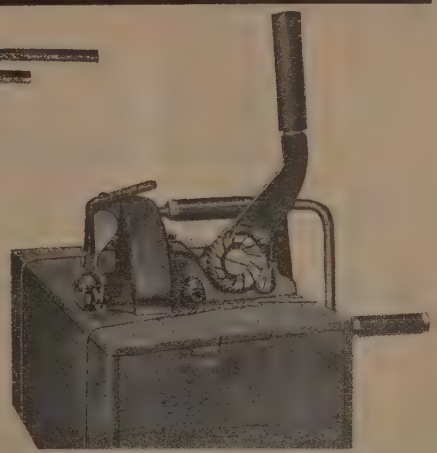

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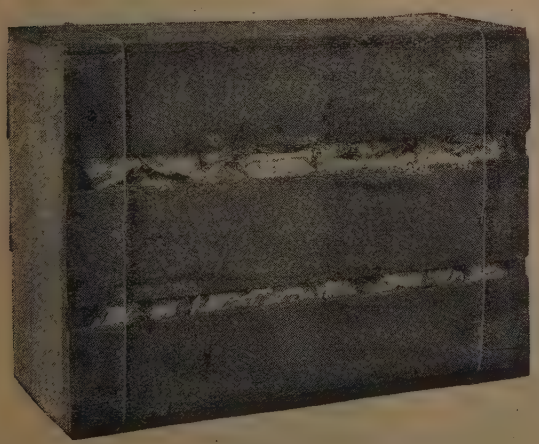

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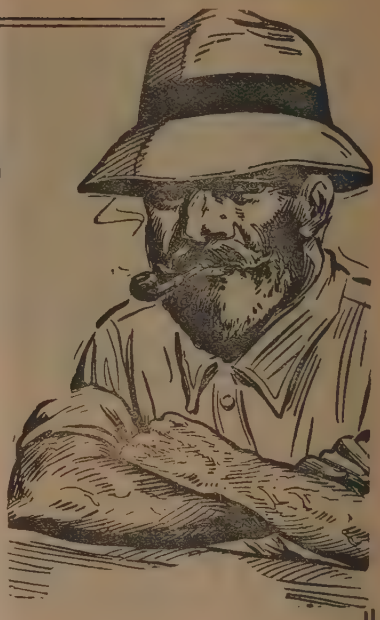

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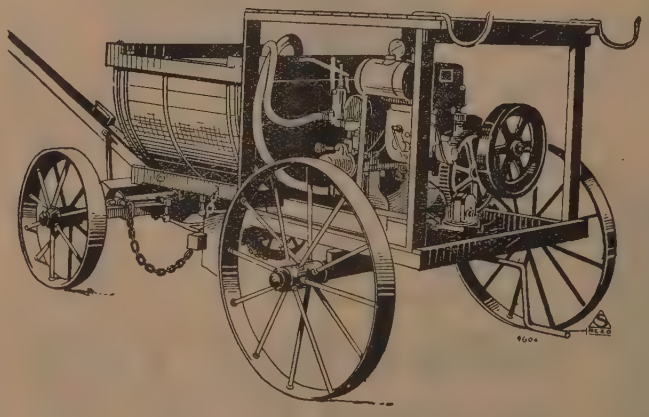

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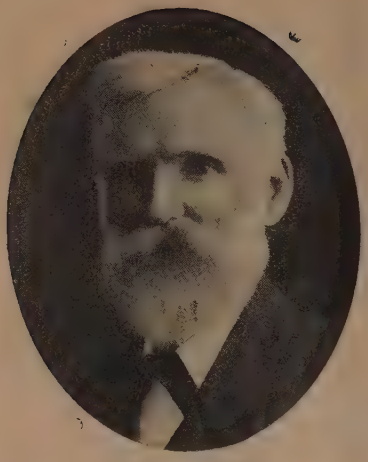
The Prevention of Loss in Oversea Apple Shipments

With Uniformly Low Temperatures and Adequate Ventilation· Shipments Should Carry Safely.

"Pre-cooling" is Unnecessary.

By Professor D. McAlpine, Investigator of Fruit Diseases.



Professor D. McAlpine

Professor D. McAlpine's researches have won world-wide recognition. In his capacity as Plant Pathologist to the Victorian Government, which he capably fulfilled for many years, Professor McAlpine published works which have since become text books in old-world universities. It was during his appointment as Federal Government Investigator of Bitter Pit that Professor McAlpine did some of his best work. His five volumes are a monument to his capacity and industry. These works are the world's standard.

In this article Professor McAlpine sets forth the differences between "Brownheart" and "Bitter Pit," and shows how both can be overcome. First and last, the trouble is caused in the ship's cold storage chambers. With a uniform temperature of 30-32 deg. Fahr., and with sufficient ventilation, fruit will arrive in England in the same condition in which it left Australia.

—EDITOR.

THE time has come when plain speaking must be indulged in, with reference to the preventable loss and waste incurred in the shipment of Apples overseas. This loss however, is not altogether an unmixed evil, since it has directed attention in a very pronounced way to the subject of transporting the fruit, so that it arrives at its destination in the same condition as when placed on board ship.

And I may say here at the outset, that we are in the fortunate position of being able to do this by following out methods which have been tested and proved and found efficacious.

The activity shown both in London and Melbourne has resulted in the calling together in Conference of representative men to dicuss the cause of the loss and the means of preventing it. In London, as reported in the press, the National Federation of Fruit Trades Associations took the matter in hand and appointed a committee to arrange for a conference of Superintending Engineers of Fruit Liners, Lloyd's Surveyors, and representatives of the Cambridge School of Botany. The object of this conference was to arrange for the investigation of "Brownheart" in apples recently shipped from Australia and also to discover means of preventing it.

Brownheart in Apples.

This name crystalized in a word the naked-eye appearance of the flesh of the Apples which were affected and very appropriately indicated the browning which occurred round the core (Fig. 1). It was also soon determined that the damage was not caused by any parasite, but as we shall see immediately, was due to the *unfavourable storage conditions in the ship's hold.*

It is, therefore, not a disease in the ordinary sense of the term, being non-parasitic like Bitter Pit, and may be spoken of as damage done to the apple.

The Browning of the apple is well-known in connection with various diseases. What is known as "American Brown Rot" is indicated at first, while the fruit still hangs on the tree, as a smooth, brown discoloration of the skin. The rotting extends inwards while the apple still retains its shape, and may ultimately embrace the entire fruit. This form of browning is not only quite distinct from Brownheart in its appearing at first in the skin, but since it is caused by a well-defined fungus, there is no comparison between the two.

There is also the European Brown Rot, as well as the Australian Brown Rot which affects the apple similarly to the American, but is distinguished from it by affecting the flowers, shoots, and leaves as well. Even the fungus causing it is different, although it is only a different species of the same genus.

The internal browning of the apple known as Bitter Pit might, at first sight, be confounded with this trouble, but a closer inspection will reveal the essential distinctness of the two.

Bitter Pit occurs practically in every country where the apple is extensively grown, and it was first described in Germany as early as 1869, under the name of Stippen, from the outward pitting or stippling of the fruit as usually observed.

Like Brownheart it is not strictly speaking a disease but a defect in the fruit, and it has always been the cause of severe losses in apple shipments. But there the resemblance ends.

While Brownheart only occurs in stored apples, Bitter Pit is quite common, in some seasons, in the fruit still growing on the tree, and instead of the browning arising around the core and spreading outwards, in Bitter Pit it originates beneath the skin and spreads inwards. But the main distinction lies in the nature of the cause producing these different effects and that will now be dealt with.

Cause of Brownheart.

The next step after naming it, was to account for the peculiar appearance surrounding the core, which renders the fruit, in some cases unsaleable. The conditions under which the fruit was stored no doubt suggested the cause, but it is satisfactory to know that a reasonable explanation has been given.

Proper ventilation is always insisted upon in the storage of fruit.

There is a ventilating system in the tissues of the apple and when deprived of air, the carbon dioxide will take its place and act injuriously. Owing to the neglect of this precaution to provide a free circulation of air, the browning and damage of the tissue around the core was the result. In other words, *Brownheart is caused by the lack of oxygen and excess of carbon dioxide in the hold where the fruit was stored.*

Cause of Bitter Pit.

It has been determined by numerous experiments, that the internal browning of the apple known as Bitter Pit *is due to fluctuations of temperature in storage.*

One of these experiments may be given here. A miniature Cool Store was erected in Melbourne, fitted with an electric fan to produce a free circulation of air: 26 cases of apples consisting of eight different varieties were placed in it, taken direct from the orchards of the Doncaster district near Melbourne, and carefully selected so as to be free from Bitter Pit. They were kept there for 1

month, from the 22nd January to the 22nd February, at a temperature varying from 34 to 35 degrees Fahr. and sometimes as high as 55 to 60 degrees Fahr.

This high temperature was owing to the fact that the machinery was occasionally stopped and under these conditions all the cases of apples were pitted and some of them conspicuously so.

When taken out they were carefully examined, and it was found that Williams' Favourite which is an early variety, was the worst with 90 per cent.

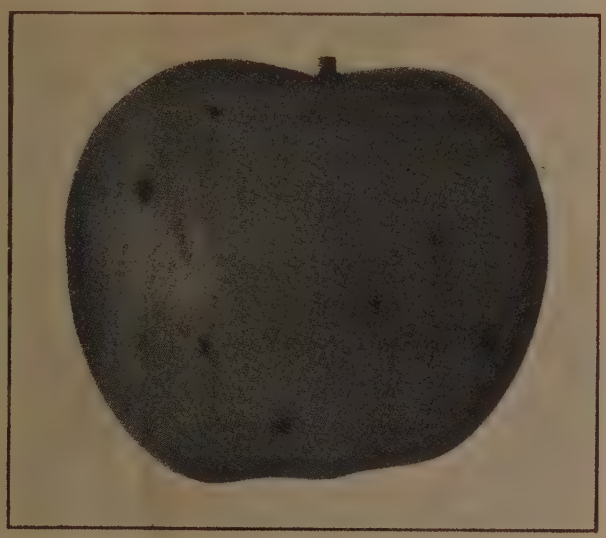


Fig. 2. — Jonathan Apple imported from California, showing development of Bitter Pit on voyage.

of Pit, and London Pippin the least pitted with only 15 per cent (Figure 2 and 3.

—:o:—

Prevention of Loss.

I COME NOW to the concluding and most important part of this article, and will state as briefly as possible, how with our present knowledge we can safely land apples overseas in the same condition as when shipped.

While Brownheart has been so general during the past fruit season, it must be remembered that all the shipments were not so affected, and this points to the possibility of being able to overcome it.

The internal browning of the apple known as Bitter Pit is also responsible for a portion of the loss, so that in dealing with preventive measures, it will be necessary to provide for both of these troubles. The remedy is comparatively simple. Remove the cause and the effects will not appear, so that if proper *Ventilation is provided, there will be no Brownheart, and if fluctuations of Temperature are avoided, there will be no Bitter Pit.*

These are the two fundamental precautions, and the details will now be given.

The first and most important point to attend to in the carriage of Apples overseas, is that of temperature. It is a well established fact, that if apples are stored at a

Temperature of 30 to 32 deg. F.

and if fluctuations beyond these limits are prevented, there is no development of Bitter Pit during a period sufficiently prolonged to transport the fruit from Australia to Europe.

It has appeared to some, that to keep the temperature within such narrow limits is impracticable, but I have tested this matter in the Government Cool Stores. Northern Spy apples were kept for six weeks there, from 25th March to 5th May and the log-book supplied by the Engineer in charge showed that the maximum variation was only 1½ degrees Fahr.

There is another misunderstanding which is rather common, relating to the danger of freezing, Whenever a temperature of 32 degrees Fahr. is mentioned, it is ruled out of court at once because it is the freezing point. But that is the freezing point of *water*, and it does not seem to be generally known that the freezing point of the juice of the apple is several degrees below that.

The value of keeping the fruit at a low temperature is thus described in my Fifth Report:—By keeping the fruit in cold storage at a uniform temperature of 30 to 32 degrees Fahr. the development of Internal Browning is prevented, and at the same time the ripening process is arrested. This is based upon the well-known principle that at that temperature there is a slowing down of the vital activities and it is practically a case of suspended animation. It is now and again reported in the Press that apples arrived in London overripe. This is a sure indication that the correct temperature was not maintained, if the fruit was shipped in proper condition.

It will be seen from the above that a correct and uniform temperature is necessary to secure the best results. The Fan system of Refrigeration has already been used in trial shipments of apples to London, the object being to have an equal distribution of temperature throughout the ship's hold, so that one portion is not above 32 degrees and another below 30 degrees Fahr.

Ventilation.

A second point of almost equal importance with the first is that of Ventilation. In some of the successful shipments of apples, such as that per the "Somerset" where I had an opportunity of seeing the cases stacked in the hold, every care was taken to provide for proper ventilation. Slats were placed between each case, so that a current of

Fig. 3.—Cross section of Jonathan Apple from Ringwood, Vic., showing development of Bitter Pit whilst on tree.

air circulated freely around them. Since the question of ventilation is essentially an engineering problem, the continuous introduction of fresh air into the hold where the apples are stored, will no doubt be satisfactorily settled from the experience gained during the past fruit season.

A third point also requiring attention is that of the condition of the fruit itself, I have proved experimentally by measuring growing apples with a pair of calipers at regular intervals, that they reach a stage when growth ceases, and then they begin to ripen. When the apple is full-grown and just beginning to ripen, that is the proper stage to pick fruit for the home market. This stage is roughly indicated by the orchardist, when he speakes of picking the apples for export on the "green" side.

Precooling of Apples.

In my experiments with the oversea shipments of apples, I did not consider it necessary to test the question of precooling, for the simple reason that when the fruit was sent from country centres in *Louvre trucks to the ship's side and when the temperature was gradually reduced to 32 degrees Fahr. the results were quite satisfactory, without any further preliminary precautions.*

As I have shown in my Reports on Bitter Pit of the Apple, the mechanism of the apple is of such a nature that it can retain moisture for a considerable time. Sir Oliver Lodge, the distinguished Physicist, wrote to me on receipt of the Report:—

"I have long been convinced that the arrangements in fruit for the preservation of moisture in dry air must be remarkable, and your investigation adds to the beauty of design manifested by their structure."

It has further to be remarked that although severe Brownheart has occurred in cases where the fruit was not precooled, its absence was also noticeable in both precooled and not precooled fruit.

When the hold is properly ventilated, and the proper temperature maintained I consider that the necessity for precooling is removed, but like all other important questions connected with the shipment of fruit, it ought to be submitted to the test of rigid experiment, and the question settled one way or the other.

I will now sum up these remarks by giving a quotation from an American source. Hesler and Whetzel (the latter Professor of Plant Pathology at Cornell University) published a manual of Fruit Diseases in 1917, in which there is a full account of "Stippen" and "Bitter Pit," principally based upon my Reports. I may explain that the term "Stippen" is used by the American authors to indicate "Bitter Pit" on the well-known principle of Priority.

When there are a number of confusing names applied to some particular object that one is adopted which was first applied to it, and so had prior claims as it were—hence Stippen.

This quotation summarizes the whole question of Prevention and is so much to the point, that a copy of it should be conspicuously displayed in the Engineer's room of every Commonwealth Liner and every Apple carrying Steamer.

Although Brownheart is not mentioned, since it had not then been recognized it will be observed that the means of prevention are applicable to both, and this enhances the value of the advice given.

The prevention of Stippen in transit or in storage is relatively simple. Shipments should be made under cool conditions, that is to say the temperature should be gradually lowered to 32 degrees Fahr. in the ships hold. The temperature must be kept low (30 to 32 degrees Fahr.) and constant. In storage the same uniform, low temperatures must be provided. It has been shown conclusively that the development of Stippin may be prevented by storing the apples at 30 to 32 degrees Fahr., under dry air conditions. The ordinary cellar or cool storage is not reliable. An increase in the temperature to 34 degrees Fahr. allows the disease to develop. The storage room should be properly ventilated; good ventilation in conjunction with refrigeration is of prime importance for the sucessful storage of fruit."

The treatment recommended possesses the two essential qualities of necessity and sufficiency. It gives all that is necessary to prevent the loss and at the same time it is sufficient for the purpose. There is no need to add other measures than those indicated, for they would only be redundant. I would suggest in conclusion, that a Model Shipment of Apples be made early in the next fruit season, that an experienced orchardist be appointed to see that the fruit is at the proper stage for shipment and carefully packed and graded, that a capable Refrigerating Engineer have full control to see that a correct and uniform temperature is maintained throughout the voyage and suitable ventilation provided, and finally that the fruit on delivery be officially reported on, as to its marketable condition.

This would be a valuable object lesson for all shippers of fruit, and would enable Australia to put its fruit on the home-market in the best possible condition. If the practical instructions here given were faithfully carried out, there would be no recurrence of the serious losses sustained during the past season. The fruit would reach its destination in the same condition as when shipped.

Appreciative.

"I get a lot of useful information from every issue of the 'Fruit World,' and do not like to miss even one copy."—H.J.P., Kurrajong (N.S.W.)

OVERSEAS CARRIAGE OF FRUIT

CAUSES OF DETERIORATION,

Report of London Inquiries,

A meeting was held at Australia House on July 27th, to inquire into the cause of deterioration in some of the 1922 Australian fruit shipments There were present Sir Joseph Cook, Messrs. A. H. Ashbolt, F. Walker, and A. E. Webb (Tasmania) and representatives of shipping companies, selling agents, etc, The matter was very thoroughly discussed, most of the speakers being in accord with the theories put forward by Mr. Ashbolt.

Brown Heart, or Suffocation.

Mr. A. H. Ashbolt, referring to brown heart, or suffocation said:—

During the 1921 season samples of apples were submitted to me for an opinion as to the cause of a new disease. From experiments conducted some years ago by Sir Henry Jones and myself in Hobart, it seemed to me that the fruit was suffocated, but I could see no reason why suffocation should take place, and I was not sure that my diagnosis was correct.

Shortly afterwards I learned that some steamers had departed from the old practice of changing the air en route and the same air was retained in the chamber (in some cases without circulation) the full length of the voyage. This knowledge strengthened the opinion previously formed and I commenced to make further inquiries. These led me to Cambridge, where I found the Food Investigation Board of the Scientific and Industrial Research Department were experimenting with C.O. 2 (carbonic acid gas) as a means to lengthen the life of the apple, and that a considerable amount of success had been achieved in this direction.

The results of these experiments were communicated to the Government of Tasmania on November 23, 1921. They showed that the retention of some C.O. 2 in a chamber stored with apples was not, as previously understood, a deterrent to good carriage, but on the contrary, an actual help. It was discovered that air in which portion of the oxygen had been converted into C.O. 2 lessened the "breathing" capacity of the apple, with the result that its "life" was extended.

Further experiments were made to determine the best percentage of oxygen and C.O. 2 required to produce the maximum length of life of apples stored in such a mixture, and also the danger line which, when passed, produced suffocation. This danger line was fixed at approximately on air composed of 8 per cent. oxygen and 12 per cent. C.O.2. At Cambridge the chambers were provided with instruments which recorded and indicated outside the percentages existent within the chamber.

A predetermined mixture was thus easily procured and maintained by air valves. In steamers, however, with no instruments, the ship's engineers could have no such knowledge, and, in my opinion, which is supported by the Cam-

bridge University authorities, both verbally and by letter, *apples carried by steamers in chambers without changing air simply suffocate the fruit, and produce the disease in appearance known as "brown heart."* The varying percentage of this trouble in different steamers is affected by the ripeness of the fruit, the temperature of the chamber, the amount of "leakage," existing in most chambers, permitting the admission of a certain amount of fresh air, and the circulation of air within the chamber. Fruit is carried in steamers employing three different methods of cooling the chamber. First, the original "dry air" system—in this the air is cooled in the machinery, and blown by fans through ducts into the chamber and circulated round and round and through the fruit, the air returning to the machine for compression and re-cooling.

The second method is known as the battery system—in this cold is produced in a battery away from the chamber, and the air is cooled by being passed through this battery and then blown into the chamber in the manner previously described, and returning to the battery for re-cooling.

The third method is the grid system. In this the piping carrying the cold gas or brine is placed round and on the ceiling of the chamber, and the air in the chamber is cooled by contact with the piping. In some steamers fans are used to keep the air circulating, in others the engineers depend upon a natural circulation. My experience is that without fans "pockets" of air occur, and that these pockets contain a bigger percentage of C.O. 2 than the other portions of the same chamber, consequently greater damage can be done in some portions of the chamber than in others.

As an indication of the damage that can be done, the experience of one steamer this season can be given. The cargo was loaded at about 80 degrees, and, believing that the side grids only were sufficient to extract the inherent heat, the ceiling grids were cut out; the result was that, after 10 or 12 days there was very little or no reduction in temperature, and the ceiling grids were then used in addition. The temperature was then reduced too quickly with the result that fruit close to the grids was frozen. As during the first period there had been an undue increase in the conversion of oxygen into C.O. 2, this vessel landed fruit some of which was overripe, some frozen, and a very large proportion suffocated.

In another case where samples of air were taken, some by the Cambridge authorities, and some by Mr. F. E. Pearce, the results show as under:—

Chamber.	Analysis of Air from Chamber. CO_2 Per cent.	Oxygen Per cent.	Condition of Fruit.
1.	18	Not taken.	No brown heart.
2.	38½	½	Severe brown heart.
3.	33	Not taken.	Brown heart.
4.	30	2½	Severe brown-heart.
5.	2	Not taken.	No brown-heart.
6.	3¾	16	No brown-heart.

The fruit in Nos. 1 and 5 had been pre-cooled, consequently the C.O. 2 given off, whilst extracting the heat, was dispersed before transferring to the steamer so that the most dangerous period of storage (first three to ten days) had passed before the steamer was at risk.

In a third case windsails had to be fitted into the lower holds to take in fresh aid before the dumpers could enter and commence discharging.

The reason why some companies instruct their engineers not to change the air is the fact that each change of air means a further deposition of snow on to the pipes. Consequently a large number of changes of air would soon make the snow so thick on the pipes as to practically insulate them. To remedy this the pipes must be defrosted. In a battery there is no trouble in so doing, but where the piping is within the chamber (as is the case of the "grid" boats) defrosting means dropping all the moisture off the ceiling grids on to the fruit underneath, with consequential complaints of "wet" fruit. Therefore it is obviously to the ship's advantage if fruit can be carried without changing air, but the result of so doing has been to develop a far more serious trouble, and one which will ruin the trade if persisted in.

Now, in the case of apple cargoes, C.O. 2 is developed at different temperatures in the ratio of doubling for every rise of 20 deg. F. Thus, at 30 deg., C.O. 2 gas is given off at a basic 1; at 50 deg., it is given off as 2; at 70 deg. it is given off as 4; at 90 deg. it is given off as 8. At a temperature of 70 deg. the peak rate of conversion occurs in five days, at 50 deg. in thirty days, and at 35 deg. in sixty days.

It is therefore clear that the conversion of oxygen into C.O. 2 takes place at a much greater rate during the earlier portion of the voyage, whilst the temperature is being brought down and the inherent heat extracted. If during this period all the oxygen in the chamber is converted into C.O. 2 it means that for the remainder of the voyage the fruit is gradually dying of suffocation. It might, and frequently does happen, that in grid vessels with out fans, where the conversion is only partial, that the C.O. 2 collects on the floor or in pockets, with the result that the steamer lands a portion of her cargo in fair to good order, and a portion damaged with brown heart. As on landing it is impossible to detect this damage, the good and damaged fruit is all mixed up on the wharf, and it is not until it reaches the market some days later that the damage is apparent. The whole cargo by that steamer then gets a bad name. Buyers cannot tell by outside appearance which is sound or damaged, consequently such sound fruit as may exist fails to realise its full value.

Air should be changed frequently.

My suggestion is that companies should in all cases instruct their engineers to change the air about four days after closing down any chamber, again about twelve days after closing down, and perhaps a third time about three weeks after closing down. I am satisfied that by so doing the whole trouble of "brown heart," or suffocation, would be overcome, and the incalculable damage now being done disposed of. In the case of grid boats I quite realise that this means a certain percentage of wet cases through the defrosting, which I am afraid is inevitable, but it is the lesser of two evils. This damage (wet cases) can be prevented by building drip trays with drains beneath the ceiling grids, but such protection means a considerable cost to the steamer, both for building and fitting trays, and to the fact that it would reduce the number of cases the chamber could carry. It should also be compulsory for "grid" boats to carry fans to circulate the air, as a natural circulation is insufficient to prevent the formation of "pockets."

My statements only refer to apples, the question of pears not being taken into consideration. In my opinion, however, the same conditions attach, and the awful condition of some of the pear shipments is further evidence of the necessity for the change advocated. Of the 39 steamers engaged there were four steamers fitted with the dry air system, 14 with the battery system, and 21 with the grid system. Of the 39 steamers 14 had no fans for circulating air, whilst 25 had. *Again, 14 steamers changed the air, whilst 25 did not.* Of the 14 steamers that changed the air only one landed a cargo with excessive damage (overripe). *None landed a cargo containing "brown heart."* Of the 25 steamers that did not change the air 20 were "grid" boats, and out of this 20 there were 12 that landed cargoes with excessive damage, and of that 12 there were 11 cargoes containing "brown heart."

The return shows that the "excessive" damage on these 11 steamers amounts to £210,283. This amount is arrived at taking the auction sale price of sound apples at the date of sale, and deducting therefrom the average price per case realised for sound and damaged apples. It is irrespective of the further loss occasioned by the fact that in many instances it was imposible to separate the "brown heart" apples from the sound, with the result that the sound apples in such shipments were prejudiced, and failed to realise the full market value for sound fruit.

Australian Pomological Conference

Official Report of recent Meeting in Adelaide.

THE Eighth Conference of the Pomological Committee of Australia was held in the Exhibition Buildings, Adelaide, on May 15th and 16th. The members present were:—South Australia, Messrs. G. Quinn (Government Horticulturist), C. G. Savage, A. B. Robin, W. C. Hackett, L. J. Wicks, W. Tilling, H. Wicks (in the chair), and R. Fowler (Acting Secretary); Victoria, Mr. E. E. Pescott, Lieut.-Col. J. H. Lang, and Messrs. J. W. Lawrey, and A. F. Thiele, W. G. Gray; Tasmania, Hon. L. M. Shoobridge and J. M. Ward; New South Wales, Messrs. W. J. Allen and W. E. Kirkness; Western Australia, Mr. G. Wickens (Chief Horticultural Officer).

The Hon. L. M. Shoobridge briefly outlined the origin of the Committee, and expressed the opinion that the time had arrived when it was desirable that the reports of the Committee should be published on the lines of the Royal Horticultural Society of England. The work of the Committee had grown, and was not confined, as at first to the nomenclature of fruit, but now included such subjects as suitable stocks, the selection of best commercial varieties of fruits, fruits for drying, etc., and he thought some connected history of the work of the Committee should be published in a form in which it would be available to fruit growers, some system being provided by which funds could be raised for this purpose. He would also like to see the nurserymen join in with the fruitgrowers in one large combined meeting, but recognised the difficulties in the way at present as May was a very busy month with them.

DEFERRED FRUITS—1921 *Session.*

Seven seedling fruits exhibited by Mr. A. F. Thiele, of Doncaster, in 1921, were to have been reported upon again, but only seedling "B" a chance seedling apple reported as good for cool storing and practically aphis free was handed in. After consideration it was decided that as it had no outstanding merit that it be classed out.

Mr. H. Stevens, Vermont, Victoria, again submitted his Red Shoreland Queen Sport, named "Just it." This apple, if reported upon favorably by the Sub-Committee in 1922, was to be recommended for mid-season planting, but as the specimen submitted was not in good condition, it was decided that this fruit be brought to the Conference next year in good cool store condition if possible.

Cole's Champion.—Some discussion took place as to a suitable name for this variety, as it could not be called "Cole's," there being an English apple of that name. It was decided to refer it back to Mr. Cole for another name.

Mill's Late Keeper.—Third time before Committee. To be submitted again in 1923, as it was considered flavor had been spoilt by contamination in transit. Suggested name to be "Millbert."

Boswell's Pride.—It was resolved that permission be given to change the name of this apple to "Boswell." and that if Victorian Sub-Committee approve a description may be published.

Rome Beauty Sports.—Considerable discussion centred around these particular fruits, there being some diversity of opinion as to the merits of the parent Rome Beauty variety. Messrs. Wickens (W.A.), Allen (N.S.W.), and Ward (Tas.) remarked that in their respective States the Rome Beauty was losing favor as a commercial variety, but the Victorian expert (Mr. Pescott) and delegates (Messrs. Thiele and Lang) pointed out that it was looked upon as the very best cool store variety in their State, and it would be a mistake to give up planting this variety.

It was pointed out that it would be an advantage if the Committee recommended certain varieties suitable for each State, and it was finally decided that the matter of the Rome Beauty Sports be finalised in 1923, and that written reports be submitted from those interested, such reports to be as comprehensive as possible, giving details as to soil conditions particularly.

Mr. Lang submitted a Sport much like Dunn's and Rome. No action taken.

Seedling apple from S. J. Kellaway, Franklin, Tasmania. Specimens were again submitted by Mr. Ward, one having been in his office for twelve months, and still fairly sound. It was decided that this apple be named, and that the name be "Kellaway." A report from the Committee to be forwarded to Mr. Kellaway, with a request that he would kindly supply grafting wood for the various State Experiment Orchards.

Hubbard's Pearmain.—Submitted by the Horticultural Committee through the Two Bays Nursery for naming. This apple is similar to that grown by Mr. Lang as "Hubbard's Pearmain," and, after discussion, it was decided that specimens be again submitted in 1923 from New South Wales and other States for comparison.

An apple of the Rymer variety was exhibited showing signs of scalding after six weeks of ordinary barn storing, and it was considered that defect was probably caused by early picking.

NEW SPECIMENS EXHIBITED.

Pear Nouvelle Merville.—An old English variety, submitted by Mr. Lang, reported to be a good late keeping variety in ordinary storage, keeping till well into September; a vigorous grower, but of second rate quality. Considered no improvement on many other well-known varieties.

Sport From Delicious.—This was reported as being a very heavy cropper, similar to "Delicious" in form, but of better colour. It was resolved that it be again submitted in 1923 with other samples of "Delicious" grown in the same district. It was also decided to get specimens of "Star of Devon."

Lang's Best.—This apple was of good colour and flavor, and reported to be blight proof, a very late variety, a good keeper, but was not recommended by Mr. Lang, as it wes very subject to bitter pit. It was considered that the apple was synonymous with "Bess Pool," and it was decided that specimens of this apple should be collected from the various States and brought to the next Conference for reference.

Black Achan Pear.—Correspondence was read by Mr. Ward re samples of this pear sent to England, in which it was considered that "Black Achan" of Australia and "Verulam" pears were the same. "Black Achan" is classed as a good dessert pear in England and Scotland, and it was thought it could not be the same variety as grown here. It was decided that Secretary write acknowledging courtesy, and thanking English Society for trouble taken; also pointing out that the pear in this country is used only for culinary purposes, and that the Committee would be pleased to receive specimens from England, if possible. Plates of "Black Achan" and "Verulam" pears were tabled from the Government Experiment Orchard, Blackwood.

Pear grown from seed reported to be a very heavy cropper, but only bearing fruit for the second time was submitted by Mr. W. J. Allen. The fruit was in green, hard condition, and in appearance somewhat resembled "Josephine de Malines," but its parentage is unknown. Specimens were left for local Sub-Committee to report on when ripe, and submit same at the 1923 Conference.

Mr. Thiele (Victoria) submitted—(a) Two pear specimens for naming. After much discussion it was decided that the varieties were unknown, and not considered worth further notice; (b) a seedling pear, "Bergamot" shaped, medium size, very similar to "Winter Nelis" in growth and leaves, ripening about the same time. It was resolved that this pear be again submitted in 1923, ripened if possible.

Pear seedling picked in March, and in fairly ripe condition. No idea of origin; exhibited by Mr. Lawrey (Victoria). Just a chance seedling, reported to be a wonderful cropper. It was resolved that there was nothing special to recommend it for further consideration.

Pear seedling.—A hybrid pear seedling X with "Forelle" in hard condition. Reported to have the property of keeping for weeks when perfectly ripe.

Pear—Cross between "L'Inconnue" and "Late Umlauff."

Seedling Apple—A cross between Jonathan and "London Pippin." Reported on in 1918 as free from Aphis and Blight; a good keeper, very small foliage. Suggested that name should be "Barossa." It was decided that the apple was a good one, but more information was require re ripening, cropping, etc. To be collected for next Conference. These were submitted by Mr. A. B. Robin.

Apples.—(a) Seedling grown by C. Crunsell, reported as free from Black Spot; very much resembling "Buncombe." Flavor considered so inferior that apple could not be recommended.

(b) Late Keeping Seedling very much resembling "Esopus Spitzenburg." Considered of inferior flavor and appearance, and not to be recommended. Exhibited by Mr. W. J. Allen.

Seedling from W. A. Gibbs, Tumbarumbah, reported to be a very heavy cropper, picking from 60 to 100 bushels per tree. Very much resembling "Rymer" in appearance, but liable to Black Spot. Resolved that as fruit was inferior in flavor and appearance it could not be recommended.

PEACH SEEDLINGS.

Seedling Peach was sent in by Government Produce Department, South Australia.—Large fruit that had been in cool store for seven weeks. Appeared in good condition, but when opened was brown and rotten round the stone. Could not be recommended.

A seedling known as "Thiele's Cling."—Season just after "Pullar's Cling." Good, clean shape, and good canner. Specimens were in good order after 3 weeks in cool storage. This fruit is at present on the market, and was submitted as an exhibit only.

Mr. Thiele also submitted a seedling plum previously shown in 1921. Good plum; rich and sweet. and well worth naming. It was decided the plum be called "Thiele."

Chance seedling plum from Mile End by C. H. Beaumont. This plum was submitted in 1918, but had not been submitted since. Gathered on day of Conference (May 15th). Very similar to "Late Harvey." Resolved that it had nothing special to recommend it, and that there were better plums on the market.

Exhibit by Mr. G. W. Wickens, W.A. Capri Figs of the "Mamme" Crop.—This was brought forward by Mr. Wickens. It was resolved that this fig be called "Simmons" Capri Fig.

An interesting discussion took place on the question of the Smyrna fig industry.

Exhibit by Mr. Pescott (Victoria).—Crown Beauty.—A cross between Rome Beauty and the "London Pippin," resembling the Rome about the cavity, and the London about the base, was shown by Mr. Pescott. Fairly largely planted in the Somerville district. Exhibit was in rather poor condition, and it was decided on a motion by Mr. Pescott that this fruit be seen again next year, exhibit, if possible, to be cool stored and in good condition.

Jonathan Sport.—Grown by Mr. Moyle, Pakenham, Vic., reported to be fairly free from Woolly Aphis. Exhibit was picked on February 26th, and was not in the best of condition. It was decided to see this exhibit next year in better condition, if possible, also some Jonathans from the same orchard for comparison.

Ellison's Orange.—Mr. Wickens, W.A., desired information regarding an apple said to be a recent importation, named "Ellison's Orange." This variety was grown by one man in the Mount Barker district of Western Australia, and was said to be an earlier apple than Jonathan, and very much resembled "Cox's Orange." The variety was found described in Bunyard. Mr. Wickens reported that it kept well in cool store, but did not seem to retain its flavor. The specimens were taken from a young tree, which might account for this. Apple was not known. To be seen again next year.

American Apple Specimens.—Mr. Pescott reported that Mr. J. R. Warren had been to a considerable amount of trouble endeavouring to obtain from America specimens of their various commercial varieties of apples for comparison with ours, and for the information of the Committee, but so far had not succeeded. It was resolved that the thanks of the Committee be tendered to Mr. Warren for his efforts in this direction.

Woolly Aphis—Mr. Shoobridge initiated a discusion on Woolly Aphis and its relation to apple stocks. Reports on Woolly Aphis, particularly in regard to its attacks on various varieties of trees prepared by Mr. Allen (N.S.W.), and also one by the Manager of Government Experiment Orchard, Blackwood, S. A., were handed around. Nothing definite was arrived at. Mr. Allen said his Department recommended tobacco stems soaked, not boiled, which was much more effective and cheaper than any other spray, the cost working out at about 1/-, as against 5/-. It could be mixed with arsenate of lead if desired.

Mr. Shoobridge suggested growing a small area of tobacco plant, drying it, and using in the ordinary way for spraying.

Mr. Ward stated that in Tasmania it was mostly young orchards on Spy stocks that gave all the trouble. The older trees seemed to get resistant, and very little spraying was done in the older orchards.

Mr. Wickens stated that in West Australia things were different, and spraying was most necessary, particularly on Cleos. His Department had carried out quite a number of experiments, and had come to the conclusion that lime sulphur mixed with Black Leaf 40 gave the best results. He mentioned rather a singular thing, that amongst the Cleos. sprayed in the tests, there appeared to be some that would not take the disease, even when artificially infected.

Mr. Lang also mentioned similar experiences. He also stated that he found that he got better results from his sprays when using a spray gun.

Mr. Kirkness (N.S.W.) suggested trying a decoction made from the leaves of Carrington apple, or any other resistant variety, either by injection or otherwise. He thought the various Government Departments might try experiments along these lines. Mr. Shoobridge moved a vote of thanks to the Governments of New South Wales and South Australia for the valuable information contained in the reports submitted by their Departmental officers; seconded by Mr. Ward and carried.

It was resolved that the Departments of Agriculture of the other States be asked to make lists similar to those supplied by the Departments of New South Wales and South Australia.

Trevatt Apricot.—Some correspondence from the "Fruit World" pointed out the confusion existing at present as regards the correct naming of the "Trevatt," "Shipley," and "Blenheim" apricots was read, and on interesting discussion followed.

Mr. Allen (N.S.W.) gave the true history of the "Trevatt" apricot, pointing out that he was responsible for naming the fruit as far back as 1892. He found it growing in Mr. Trevatt's garden amongst a number of other varieties, and selected it as being the best. It was propagated by him, and is a distinct variety, ripening evenly all over, and splendid for canning or drying.

Mr. Lawrey (Vic.) after stating the amount of confusion that now existed, stated that Messrs. Brunning could trace their "Shipley," "Blenheim" back for thirty years, and that it was true "Shipley," and he thought some steps should be taken to clear up the matter, as at present it was claimed that "Shipley," "Blenheim," and "Trevatt" were the same apricot, and that "Blenheim" again was different from "Shipley's Blenheim." Mr. Allen promised to send over samples of fruit and leaves of "Trevatt" to be dealt with by the State Sub-Committee next season, and it was finally resolved on the motion of Mr. Thiele that when apricots are ripe next season the State Local Committee investigate and report on "Blenheim," "Shipley," and "Trevatt" varieties.

The balance of the report, which covers the discussion on peaches for canning, peaches and apricots for drying, plums for prunes, black end of pears, will be published in our next edition.

Editorial

Every section of the fruit industry will be interested in the articles in this issue, dealing with export conditions.

Export of Fresh Fruit.

Practical experienced shippers will heartily endorse Prof. McAlpine's carefully worded article. Summarised his conclusions emphasise careful handling of the fruit, transference in louvre trucks from country centres to ship's side, care in stowing, gradual reduction in ship's chambers to 30-32 degrees Fahr., and air circulation. That is a sensible, workable position. There is nothing mysterious or overdrawn, and the trade is viewed from the eminently practical standpoint of a commercial proposition to the growers, who are in the business to make a living.

Pre-cooling—even if it were practicable (which it is not)—would be an unnecessary expense. An English report refers to "pre-cooling being an advantage in unventilated holds." But who wants to ship in unventilated holds? The Apple is a living organism, breathing in oxygen and giving our carbonic acid gas.

In these days there must be reduction of expenses in every direction if the export trade is to be maintained. And we must export, else the local markets will be hopelessly glutted. Growers even object, and rightly so, to the proposed imposition of ½d. per case inspection fee. There must also be a big reduction in freights.

No official advice has yet been received as to the adoption by the Federal Department of Trade and Customs of the amended regulations. The present gazetted regulations, as we have pointed out, are quite unworkable; it would give relief to this burdened industry if prompt announcements were made—

1. Reduction of freights.
2. Adoption of amended regulations.
3. Repeal of proposed inspection charge.
4. Cessation of "pre-cooling" propaganda.

Melbourne City Fruit Trade.

During the four years in which Melbourne fruit shops were compulsorily closed at 7 p.m. four nights per week for five months of the year, the Australian fruit industry suffered the loss of over £40,000. For the repeal of the restrictive legislation "The Fruit World" and its staff worked unceasingly. Immediately the ban was lifted fruit sales increased and the market became more buoyant. The full effects will not be felt for some time, as so many people became accustomed to the refusal of the shopkeepers to sell fruit that they "lost the habit" of buying from city shops.

Think of this: If the restrictions had remained it would have been illegal to have sold fruit from Melbourne cafes, either day time or evening during the Royal Agricultural Show, when Melbourne is full of visitors.

It is pleasing to note that growers everywhere recognise and appreciate the championship of their cause by "The Fruit World."

THE STARLING CURSE.

In a letter to Mr. C. French, commenting on the recent articles which have appeared in previous issues of the "Fruit World," Mr. C. H. Zercho, of Box Hill (Vic.), writes as follows:—

"I have more than a passing interest in the starling, for my son has an orchard at Berwick, and in consequence of the tens of thousands of starlings he gathered hardly any crop at all off nine acres of Apples and Pears.

"It has occurred to me that poison gas would be a most effective and comparatively economical means of combatting this pest. Poison itself is no good; shooting is quite ineffective, and trappers cannot trap these beggars, for they roost in the numberless trees along Kardinia Creek.

"Surely some cheap poison gas, noninjurious to human beings and to fruit, could be made up to slay these multitudinous devils.

"Considering what a pest they are in so many ways, would it not be well if the Department of Agriculture were to give some consideration to this proposal?"

AMERICA ABLE TO SECURE NEW VARIETIES.
Australia Not Permitted.

It is reported that many inquiries are being made in Australia from various organisations in the United States including the American Canners' Association, and the Washington Agricultural Department, regarding Goodman's Choice Peach. The Americans are more favored than we are in this way If we have anything new in Australia they can get it from us, but if they have anything new, under the quarantine regulations we are totally debarred.

A recent case came under our notice where a New South Wales grower desired to import from America four or five new varieties of strawberry plants. He actually placed the order and the goods are now on their way out, but the Australian Customs Department will not allow them to be brought in under any conditions, although the importer does not mind what steps they take in the way of inspection, quarantine, etc.

The need for a quarantine station for testing new varieties has been impressed on the Government time and again, but without avail. The harsh administration of the quarantine regulations will place Australian growers at a disadvantage in regard to securing new varieties which are being raised in other parts of the world.

Shepparton Orchard Products Ltd. was registered on September 18, 1922. Authorised capital, £5,000, in £1 shares. Subscribers for 10 shares each: G. D. Scott, E. G. Simpson, E. W. Earle, J. A. Rushton, A. E. Bailey, W. Stewart, C. Davies, all of whom are directors. The registered office is at Shepparton, Vic.

Western Australia

The annual report of the Department of Agriculture for the year ended 30th June, 1922, is to hand.

The officer-in-charge of the fruit industry, Mr. G. W. Wickens, reports that the total acreage under fruit trees is 19.421 acres, under vines, 3,210 acres, a total acreage under fruit of 22,780 acres, the value of produce being estimated at £682,895.

In 1912 there were 65,205 cases exported; the 1922 the quantity exported was 269,241 cases. The principal fruits exported were as follows:—

Apples	242,489 cases.
Oranges	14,034 cases.
Grapes	9,425 cases.
Pears	3,094 cases.
Other Fruits ..	199 cases.
Total ..	269,241 cases.

The dried fruit industry is increasing.

We hope to publish further extracts from this report next issue.

BRIDGETOWN FRUITGROWERS ASSOCIATION.

The monthly meeting of the above Association was held at Bridgetown on August 18th, Rev. F. Davies in the chair. Also present: Messrs. G. W. Hester, Geoff. Hester, J. R. Walter, J. Young, A. S. Arkle, C. H. Ozanne, A. Flintoff, E. E. Hill, Smith, Craddock, E. A. Haines, and A. S. Lowe (secretary).

It was decided to endeavour to wait on the Railway Department regarding the unsuitable fruit shed being erected at Bridgetown; also to endeavour to bring about better handling facilities of export fruit at the Fremantle wharf, and a system of insulated sheds.

Mr. Mauger delivered an interesting address on the export trade of the past year and cool storage at the Fremantle wharf.

Personal

Congratulations are extended to Mr. A. G. Gunner, the popular secretary of the Harcourt Fruitgrowers' Progress Association, on his marriage, which took place on September 23rd.

We are pleased to learn that Mr. W. E. Branson, the market representative of the V.C.C.A., is making a quick recovery from the injuries received recently as a result of the collision between his car and a motor cycle at Hampton. Mr. Branson expects to leave the hospital shortly.

Mr. Walter J. Foster, fruitgrower, Merrigum, has returned after an enjoyable three months' trip through California.

Mr. A. W. Palfreyman, managing director of the Australasian Jam Co. Pty. Ltd., recently spent a few months in California, U.S.A., and has now returned to Australia.

VICTORIA

Growers in Conference

Amendments to National Council desired

Victorian Fruitgrowers' Central Association.

The monthly meeting of the Executive Committee of the above association was held on September 26th. The president (Mr. W. E. James) in the chair. Also present: Messrs. W. C. E. Jones, J. W. Bailey, W. J. Foster, J. H. Lang, C. W. Grant, J. G. Aird, H. Henderson, H. H. Hatfield, J. Tully, R. Mair, A. F. Thiele, F. W. Vear, the secretary and treasurer. Messrs. E. E. Meeking and P. J. Carmody also attended.

Closing City Fruit Shops.—The secretary reported that the Bill exempting city fruit shops from early closing hours had passed through both Houses and was now law. A vote of thanks was carried to Mr. W. H. Evarard, M.L.A. and Mr. R. E. Boardman for their efforts in connection with this matter.

Purchase of Fruit for Cool Storage Experiments.—A letter was received from the Cool Stores Association stating that in response to their request to the Department of Agriculture that fruit should be purchased for cool storage experiments instead of being donated by growers. Mr. Pennington, Assistant Minister for Agriculture, had replied as follows:—"The recommendation that the Department should bear the cost of the fruit for these experiments is typical of the lack of personal co-operation on the part of fruitgrowers in all such matters undertaken solely with the object of benefitting the industry." The letter was received with the comment that this did not get over the fact that growers had to bear the loss of fruit, and further that the Department, by purchasing fruit, would be certain of their supplies, and would be in a better position to carry out experiments.

Interstate Inspection Fee.—The Assistant Minister for Agriculture wrote stating that they could not agree to any reduction in the present interstate inspection fee. It was more likely that this amount would be required to be augmented in view of the increased volume of trade. A letter was also received from the Tasmanian Minister for Agriculture agreeing to proposed reduction of inspection charges to the extent of 50 per cent., provided other States were also agreeable.

As the Victorian Government would not agree to the proposal, nothing further could be done, but it was decided, on the motion of Mr. McNab, that Mr. Everard be asked to request in Parliament House that a statement of the amount received in inspection fees be tabled, also the cost of inspection.

Overseas Shipments of Fruit.—Mr. Bailey referred to the necessity for closer working with the Fruit Exporters' Handling Committee in order to obtain their assistance on the question of better carriage of fruit overseas and better handling, reduction of freight, and other matters. They must recognise that this Committee, which consisted of export agents, was a necessary link in the export business. In order to obtain closer working between the two bodies he moved that a letter be sent to the Fruit Exporters' Handling Committee asking them to send two members to the monthly meeting of the Central Association, also if they would permit two members of the Central to attend their meetings. The motion was seconded by Mr. Lang and carried. Messrs. Mair and Bailey were appointed representatives.

Reduction of Freight on Export Fruit.—It was decided that efforts be made to secure a reduction in the rate of freight to 3/- per case.

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Representatives to State Advisory Council Appointed.

The Council Meeting of the Victorian Fruitgrowers' Central Association was held on September 26th. In addition to the executive of the association, there were present representatives from the Metropolitan Fruitgrowers' Association, the Victorian Orchardists' Co-operative, the Coastal Farmers, Pakenham, Ringwood, Diamond Creek, Merrigum, Ardmona, Doncaster, and other districts.

The proposals as adopted at the recent interstate conference with the Minister for Customs were read. These were published in full in our last edition.

After a long discussion on this matter, it was decided, on the motion of Mr. Lang, that the appointment of representatives to the State Advisory Council for fresh and canned fruits be made, and re-appointed annually at the convention of the Central Association. Messrs. Aird and Bailey were elected to represent (fresh fruits) on the Advisory Board, and Messrs. Foster and McNab (canned fruits).

It was decided that efforts be made to secure more equitable representation on the Federal and State Advisory Boards for fresh fruits, and that a fifth section be added to include representatives of hard fruits.

A resolution was also carried requesting that fruitgrowers' organisations throughout this State be permitted to transmit business to State Advsory Boards, who, in turn, would pass same on the Federal Advisory Board.

Canned Fruit Pool.—Mr. Foster was appointed to confer with the Minister on behalf of Victorian fruitgrowers in regard to a canned fruit pool for the coming season.

VICTORIAN BERRY FRUITS.

Direct Supplies to Householders.

The United Berry Growers' Association of Victoria has completed arrangements for the distribution of this year's berry crops. The association has appointed the Household Supplies Company, of 46 Russell street, Melbourne, as its distributing agents, The main idea is that of direct distribution by delivery waggons to the consumers' doors at a minimum cost, whilst maintaining a fair price to the growers. The fruit will be packed in 2 and 4 lb, baskets and 12 lb, buckets, the latter so constructed as to be non-returnable.

Deliveries from country stations will be in bulk, thus saving freight. Orders will be given to growers enabling them to pick for despatch by certain trains whilst deliveries of householders are similarly organised.

The streets of Melbourne and suburbs have been mapped out and each section is being canvassed by a returned soldier salesman or a returned soldier's sister. The company will also fulfil orders for sugar, cooking utensils, bottling outfits, groceries, etc., which will be delivered at the same time.

The Berry Growers have a representative on the Board of the Company. A trust account has been established on which the company and growers' representative may operate. All fruit will be paid for by cash, and payment will be made to the grower from whom the fruit is received within seven days.

The president of the United Berry Growers' Association is Mr. W. C. E. Jones, J.P. (Silvan) and the hon. secretary is Mr. E. J. Thompson.

Harcourt.—Large quantities of apples and pears are now leaving the cool stores, principally to the northern Victorian towns and interstate markets.

With few exceptions the fruit has kept well and is realising fair prices.

All fruit trees are showing well for a moderate crop next season; weather conditions have been good, and there should be no shortage of water for the coming year.

The area under fruit trees is steadily increasing, as fresh plantings are being made each year by both old and new growers.

Fruit Growing Under Irrigation

Cultivation :: Applying Humus :: Care of Young Vines

(By Our Special Correspondent.)

THE irrigation season commences in most of the river settlements in September, and again one feels that the advice "to give the minimum of water and the maximum of cultivation" should be followed out.

Deep and thorough cultivation reduces the loss of soil moisture by surface evaporation to a minimum, encourages the trees and vines to root deeply, thus having a larger field from which to gather both moisture and food materials.

Cultivation should be carried out as soon as possible after an irrigation; do not allow the surface of the soil to become caked, as much moisture is lost from a hard compact surface. Endeavours should be made to have the vineyards and orchards free from all undergrowth as early as possible. Weeds reduce the available soil moisture, harbor insect pests and help to create conditions favourable to the development of fungoid diseases.

In our irrigation areas every precaution should be taken to conserve the soil moisture throughout the summer in order to avoid the necessity, as far as possible, for frequent and heavy waterings.

Seepage is the nightmare of irrigationists and every grower should do his utmost to reduce the danger, by using the minimum of water required to keep their plantations in good heart.

Thorough cultivation is essential to successful fruit growing, whether it be in an irrigated or non-irrigated area. The shallow and poorly cultivated orchards are the first to show signs of the need of moisture, consequently the yield of fruit is affected both in relation to quality and quantity.

Nitrogen Essential.

In most, if not all of the Mid-Murray areas, the soils are lacking in organic matter, consequently in nitrogen.

The best method to apply humus is by the addition of stable manure, and where this is available it should be applied to both orchards and vineyards. The manure is best spread directly on the land, do not stack it in a loose heap in the stable yard as much ammonia is lost by this practice. Ammonia consists of Nitrogen and Hydrogen in chemical combination and when this gas is lost the manure is considerably reduced in value.

The next best method of increasing the humus content of the soil is by ploughing under green crops, but this method is not advocated during the summer, the seed should be sown during early autumn or late summer and the plants ploughed under during the winter.

Nitrogen may be added to the soil during spring and summer by the addition of Sulphate of Ammonia and Nitrate of Soda.

The Nitrate of Soda contains 15 to 16 per cent. Nitrogen and the Sulphate of Ammonia 20 per cent. Though the sulphate has to undergo a chemical change before it is available to the plants, it is fairly quick acting and has given good results in many fertilizer trials along the Murray Valley. Applications of both the Nitrate of Soda and the Sulphate of Ammonia should be given during the growing period, at the rate of 2½ to 4 cwt. Nitrate and 2 to 3 cwt. of the Sulphate.

Sultana—trellised vine-growing in the orchard of Mr. J. Aird, Moorook, S. A. Yield 4½ cases fresh fruit

Care of Young Vines.

During the first season young vines should be encouraged to make as much leaf growth as possible, the greater the area of the leaf surface the stronger the root system. The practice of reducing the growth back to a single shoot in the first season has little to recommend it. If the vines are growing strongly they may be staked and one shoot selected and tied up to the stake, or if one is in the pleasant position of having their vineyards trellised the shoot can be tied up to the wire. In either case the remainder of the shoots should be retained and allowed to lie along the ground. Sap flows to the vertical more readily than along horizontal branches, consequently the upright shoot will gain an additional amount of the sap and the resulting growth will be more vigorous than that on the trailing shoots.

It is a debatable point whether this first season's training has any great advantage, one feels that the energy expended in this direction might be more profitably applied, especially on large areas, by constant hand hoeing around the vines.

Vines in most instances are better pruned back to a single spur of two buds during the second winter's pruning, the shoots arising from these two buds are encouraged to grow and all others are removed. When the brittle stage has passed and there is little danger of the shoots being broken off by the wind, the stronger shoot is selected and the other is pruned off. The shoot retained is taken up to the wire where it is intended to frame the arms of the vine, and the top is cut back to the wire to force the buds into growth. This is the practice adopted when espaliers are to be framed; where cordons are being trained the shoot is allowed to grow on unchecked.

In the case of espaliers the two top lateral growths are encouraged, these will form the first portion of the main arms at the next winter's pruning. All other lateral shoots arising lower down the stem are pinched back from time to time. Do not reduce the leaf growth wholly along the stem, but retain as much as possible. It is essential that the young tender bark of the stem should be protected from the hot sun to prevent the hardening of the bark.

The hardening of the bark restricts the sap flow. The larger the leaf surface the greater the food suply of the plants and the stronger the resulting shoots.

Murrumbidgee Irrigation Scheme

History and Development.

THE Murrumbidgee Irrigation Scheme was first talked of about a quarter of a century ago, and it has been the subject of discussion amongst politicians and agricultural thinkers ever since. Fortunately the Departmental Officers in control of the gauging and measuring of the run-off in the various rivers and creeks of the State foresaw the possibilities of the Murrumbidgee as a supply for irrigation purposes many years ago, and lengthy records are available of the vagaries of its flow. These were, therefore, available for the Engineers who designed the great dam at Burrinjuck, and subsequent measurements, which are still being carried on, go to prove that the dam has been founded on conservative estimates as to the general average flow of the river.

It is hard to correctly apportion the credit for the origin and carrying out of this Scheme, but the "Burrinjuck Dam Construction Act" (the first Legislative measure dealing with this Scheme) was passed in 1906, when the Liberal Government was in power. "The Murrumbidgee Irrigation Act of 1910," which constituted a Trust for the management of the Areas was, however, passed by the succeeding labour Government, and the original Irrigation Trust consisted of Messrs. Arthur Griffith (Minister for Works), J. L. Trefle (Minister for Agriculture), G. S. Beeby (Minister for Labour and Industry), with Mr. L. A. B. Wade as Chief Executive Officer and Secretary.

The engineering work on this Scheme has been, in the main, designed by the late Mr. L. A. B. Wade, who is rightly looked upon as father of the Irrigation Areas, and associated with him from the commencement has been Mr. H. H. Dare, formerly Chief Engineer for Irrigation, and now Engineering Commissioner in the Water Conservation and Irrigation Commission as at present constituted.

The land so far resumed consists of the old McCaughey Estate, "North Yanco," in area approximately 80,000 acres, the greater part of which is now under irrigation, and the adjoining pastoral holding to westward, known as "Gigeldrie," totalling 100,000 acres approximately, practically all of which is now developed or in course of development—mainly for soldier settlers. At Mirrool a considerable number if holdings, mixed wheat and sheep propositions, have been resumed, and one or two smaller stations, the largest of which was known as "Ballingal." The total acreage now under irrigation in the vicinity of Griffith, and the total number of farms taken up there, are approximately equal to the Yanco Areas, but as the bulk of the future development will be at Griffith that end of the Area seems destined to develop into a larger centre than Leeton.

So far as the Deed of Transfer of these properties was concerned, the Government compensated the holders for forced resumption, the usual allowance of 10 per cent. over and above market value being granted. The old holders went right out of possession on fixed dates, but in the case of the McCaughey Estate, Sir Samuel was allowed the right to retain 25,000 acres of land on the Southern side of the railway line until his death, the Executors transferring this to the Irrigation Commission within twelve months thereafter, and the fine mansion, which formed Sir Samuel's home, has been handed over, with the surrounding area of about 600 acres of land, to the Department of Education, which has just established there the first Agricultural High School opened outside the metropolis in New South Wales. The present area of land held by the Irrigation Commission is approximately 336,150 acres, so it will be seen that a large area still remains to be resumed in order to fully utilise the whole of the available water in Burrinjuck.

Of the land at present resumed, all save approximately 80,000 acres is irrigable, but as some of the country is of quality considered to be mainly suitable for the growing of fodder crops, it is being made available in large areas for dairy farms of, say, from 150 to 250 acres. These farms only have a water right of 80 acre feet attached to them, consequently a good deal of this land will never be used for irrigation purposes.

GRAFTING GRAPE VINES.

Grape vines are grafted in the springtime, after they have shown out three or four leaves on each spur, says the Horticultural Instructor (Mr. Geo. Quinn) in reply to a correspondent, in the South Australian "Journal of Agriculture." "Vines to be grafted are sawn off a little below ground level, the stem split carefully, and the wedge-shaped grafts inserted into the split, making the layers which are just underneath the bark meet in the stock and scion. If the stock be split carefully, and a wedge inserted into the centre, usually one graft is fitted into the split on either side, and when the wedge is withdrawn the stock clamps the scions or grafts holding them in position; but to be sure, a piece of binder twine is usually bound around the stock.

"The whole is then covered up with the fine soil until the mound hides the top of the grafts. The grafts or scions are secured in the winter at pruning time and buried in moist sand or soil in the shadiest or coolest position, so as to retard any movement of sap and keep the buds dormant. When the time comes for grafting, these are dug up and cut into lengths so that each scion will only carry two buds. When the operation is completed, shoots will soon begin to push through the mound, and when these appear the soil should be carefully scraped away, and if the young shoots are suckers from the stock they should be rubbed off and the soil mound carefully replaced. This is a most important attention and should not be omitted."

NITROGENOUS FERTILISERS FOR VINES.

Experiment in South Australia.

In the original layout of the Government Experimental Orchard at Berri, S.A., there were three plots of Grape vines of equal size, consisting of Gordos, Sultanas, and Currants, on which manurial tests were carried out for a number of years. Since the orchard was taken over by the Horticultural Branch of the Department of Agriculture, the tests have been continued, but the method of applying the fertiliser has been somewhat modified. Instead of using a drill for distributing it, the fertiliser has been placed in the bottom of the first three or four furrows on each side of the rows of vines, by means of an attachment between the handles of the plough. Four years have elapsed since this procedure was first adopted. The results in both the crops harvested and the growth shown indicate the great need in these soils for some nitrogenous fertiliser.

Owing to its being suitable for mixing with other acid manures, sulphate of ammonia has been used in all cases for supplying the nitrogenous content of any combination, and the effect is very marked, particularly during the time the foliage is on the vines. Whether the sulphate of ammonia is used by itself at the rate of 1 cwt. per acre, or applied with superphosphate, or in conjunction with superphosphate and sulphate of potash, the vines have responded very markedly. It is quite possible that similar results would have been achieved from the use of nitrate of soda or blood manure rich in nitrogen, but the utilisation of these would have involved separate dressings and, consequently, increased the cost of the tests.

DIRECT STEAMERS FROM SYDNEY AND MELBOURNE FOR NEW ZEALAND.

We are in receipt of advice from New Zealand that arrangements have been made for two steamers to leave from Sydney for the South Island of New Zealand on the 12th and 26th of each month, and one steamer from Melbourne every ten days.

Growers are directed to the prices being realised for Australian fruit sent to New Zealand, and are advised to take advantage of the excellent market offering in that country.

The Sugar Industry and Fruitgrowing

Fruit Pools Must Continue as Long as Sugar is Controlled.

Mr. F. T. Pullar's Evidence Before the Federal Government Public Accounts Committee.

Giving evidence before the Public Accounts Committee on August 31, Francis Thomas Pullar, orchardist, Ardmona (Vic.), stated he had been growing fruit for 16 years. Growers asked for a Pool last year because of the evil effects on the fruit industry caused by sugar control.

Replies to questions by various members of the Committee were given as follows:—

Has the Government Fruit Pool been taken advantage of to any extent?

Mr. Pullar: I do not know of any fruit canned by private enterprise outside the pool last year, except at Shepparton. The high cost of sugar has had the effect of decreasing the demand for fruits for jam and canning. Until two years ago we had no difficulty in selling our Apricots for jam-making purposes, but now they are practically unsaleable. We used to get £18 to £24 a ton for our Apricots for jam-making. Last year there was an advance of 1d. per lb. on our Apricots; that is £9/6/8 per ton. Taking an acre of orchard under Apricots, producing 4 tons of fruit, it would require 4 tons of sugar to manufacture that fruit into jam. That is to say, about £37 worth of fruit would take £184 worth of sugar to turn into jam. The interest charges on the sugar alone, at 7 per cent., covering six months—the average length of time over which jam is held by the manufacturers—would work out at £6/8/10, which is equal to one-sixth of the value of the fruit. I can state the position this way: The interest on the sugar required to manufacture that quantity of fruit—namely one acre's production—would be equal to £1/17/2 per ton of fruit. With respect to Plums, the interest on the sugar alone would be equivalent to 34 per cent. of the value of the fruit. If the jam were held for a year the interest on the sugar used would equal 68 per cent. This kind of thing means that the manufacturer is not safe in making up any quantity of jam and preserves for fear that he might have to carry it through the season. The inclination is to manufacture less than is required, rather than take this risk. As a result we cannot sell our fruit. The fruit not sold for jam-making is thrown upon the open market, with the result that there is a glut. Two years ago only about five per cent. of the growers producing fruit for jam and canning purposes paid their expenses. Last year the fruitgrowers did not see a profit, taking into account the cost of management of their orchards and depreciation. This is due entirely to the high price of sugar.

How would you remedy it?

By bringing down the price and allowing manufacturers to import sugar for their export trade when sugar is cheapest. I understand that the present Minister of Defence (Mr. Greene) said, in the course of his evidence before this Committee, that his policy had been "to hang off as long as possible," and then that he bought when the market was at its dearest. If our sugar supplies are to continue to be bought on that basis, our position will be hopeless. The growers approached the Minister, and asked to be allowed to import their own requirements at £15 per ton. Permission was refused and we were told that in any case we could not import because there would not be ships to carry the sugar. That, I think, was in 1918. We asked to be permitted to import from 10,000 to 20,000 tons.

By Mr. Bayley: When the embargo was lifted for eight months, and you had an opportunity to import, how much sugar did you people import?

The manufacturers started to do so, and at a deputation that waited on the then Minister of Trade and Customs (Mr. Greene) in the matter of getting advances upon the fruit, the Minister was told by one of the manufacturers that his firm were availing themselves of the permission to import their sugar supplies. Two days later manufacturers received a letter from the Department notifying the withdrawal of permission to import.

But what was done during the eight months in which there was permission to import?

The trouble was that this permission was granted after the fruit season was over. There were six months to go before another crop would be available. Naturally, the manufacturers would not import six months before the fruit was ready, they began to do so only very shortly before permission was withdrawn.

Do you suggest that the needs of the fruitgrowers could be more cheaply met by the maunfacturers of jam and preserves importing sugar and paying duty thereon rather than by their using the Australian produce?

Yes; that is for their export trade.

By Mr. Bayley: For how long were you securing sugar in Australia at a lower cost than the world's parity, plus duty?

From one to two years, in which period sugar was cheaper here than elsewhere. For the 1918-19 season we would have imported our own requirements at £15 per ton if we had received the permission which we sought. For canning fruit the controlled price of sugar, £46 per ton, contrasts with the world's parity of £20 per ton. There is a difference in the costs of the syrups used per dozen tins of canned fruits amounting to sevenpence for every dozen tins produced. The extra charge for sugar is equal to £2/6/8 per ton on the fruit used for canning. Naturally, that puts a brake on consumption. Manufacturers, when getting sugar, are required to pay the full price of £46, but they do not get their rebate until their product is exported; and meanwhile the interest charges are being carried on.

By Mr. Fenton: What is the acreage of jam fruits and fruits for preserves in Australia?

According to statistics presented by the Minister for Trade and Customs to the deputation of fruitgrowers to which I have referred, there are more than 350,000 acres of fruit in bearing. I do not know of any statistics showing the proportion of fruit for jam and preserves. In 1920-21 there were 100,445,686 pounds of jams and jellies manufactured. Half that quantity would consist of sugar, which means that there would be £1,200,000 worth of sugar used. The overcharge on the sugar would be equal to about £600,000. It takes extra money to finance the manufacturer because of the fact of sugar control. The interest bill on that sum alone for six months comes to about £47,000. My view is that the rebate should be paid before the produce is exported. The sugar question is even affecting crops of hard fruits, such as Apples, for the reason that the glut of soft fruits floods the market and there is immediately a glut for every variety. Orchard values have depreciated by £40 per acre. Orchards which were worth about £100 per acre more than four years ago recently sold at £35 per acre. Land to-day, however, is practically unsaleable.

By Mr. Bayley: How do present values compare with pre-war prices?

There has been a fall of 25 to 30 per cent.

By Mr. Fenton: Is your sole hope of competing in the world's markets a drastic reduction in the price of sugar?

Yes. It must come.

Do you anticipate that in the next few years there will be low world's prices for sugar?

I should say that the prices will come down considerably lower than they are to-day. I had a letter handed to me a little while ago which contains particulars of cables dealing with sugar prices from Java, South Africa, and the United States of America. In Java, for August-September shipment, the price is £18/16/11 per long ton (2,240 pounds). That, I understand, is for Mill White, which grade is quite suitable for our trade. Mauritius sugar is under an embargo, but Natal sugar is quoted at £28/14/-; and United States of America sugar is £22/3/4. The particulars do not mention what sort of sugar this is, but it is suitable for us in the jam and the canning trade.

Are the preserving qualities of Mill White as good for the canning process as refined sugar?

Yes.

Is it your view that so long as there is sugar control there must be Fruit Pools?

Yes.

By Mr. Fleming: How will that help you in the matter of exports?

If the Government is going to continue the control of sugar, it must take the risk in regard to fruit, just as in the matter of sugar itself. To-day our industry is being killed. Manufacturers will not handle our fruit. They dare not take the risk. The Prime Minister promised us a fortnight ago that he would give a decision whether there would be a pool or not. That was to have been announced last week. We are still waiting.

By Mr. Fenton: Do you look to the pool to save you? Will it give you a better standing on the world's market?

Well, we have no standing against our competitors at present. Californian manufacturers bought their sugar requirements last season to manufacture the present crop at £14 per ton. That is what we are up against.

By the Chairman: What will be the advantage to the fruitgrowers of having a fruit pool?

If they can get back their cost of production they will, at any rate, be doing better than to-day.

By Mr. Fenton: You desire an advance from the Government to pay the growers' expenses, and you wish the Government to take the risk involved in the marketing and sale of your produce?

Yes; we would not ask for that if sugar were decontrolled. We consider that Government control is usually bad, compared with private enterprise. *We dislike having to ask for a fruit pool. We would prefer that the manufacturers have the right to buy their sugar in the cheapest market, and to pay the duty.*

If the control of sugar continues, and the present price is not reduced, do you look to the continuance of pools to save the situation?

We do not want to be compelled to bear the whole of the loss. The fruit industry is being asked, in fact, to do what it cannot do.

By the Chairman: And your view is, in effect, that, instead of fruitgrowers bearing the whole burden, the pool would distribute any loss amongst all the taxpayers?

Yes. If pools are good for one class of producer they are fair and proper for another class. It is to the interest of the Government that our fruit products should be manufactured. If there were £1,200,000 worth of sugar used each season in the manufacture of jams, the Government would be getting the full price, under the pools, of £46 per ton.

By Mr. Fenton: In effect, you, who belong to one set of producers, would like to see another class of producer penalised, or doing less favourably than at present? Is there not any fellow-feeling between you?

Not when our class of producer has to carry the whole burden upon its own shoulders.

By Mr. West: Are the fruitgrowers anxious to get imported sugar?

Not if we can get Australian sugar as cheaply; or more cheaply, at any rate, than to-day. It is the cost, and not the origin of the sugar, that worries us. Since the control of sugar, the fruitgrowers have got only about three-quarters of the price that they used to get for their produce, and meanwhile all our working expenses have gone up. If the sugar grower were in the same position as we are, compared with pre-war days, he would be getting only about £13/10/-. That is to say, the pre-war price was about £18 per ton. If there were the same reduction in the price of sugar as there has been in the price of our fruits, the cane grower would be getting about £13/10/- to £14. Another direction in which the fruitgrower is worse off than the cane grower is that we have to wait for years in order to bring our trees to a state of production.

We understand that the land in Queensland, on which sugar is grown, is about three times the value of pre-war price?

Naturally, if an industry is profitable land values will rise. Since the Queensland sugar industry is about three times as profitable as it was formerly, it is natural that the land should be deemed to be three times as valuable.

By the Chairman: Do you infer, then, that it is the consumers of sugar who are causing values to rise in Queensland?

Yes. But not willingly. It is the Government control of the sugar industry. That industry and the fruit industry are at the two ends of a see-saw. As the value of sugar land goes up, the value of orchard land goes down.

By Mr. Makin: Are your views the same as those held by the larger number of fruitgrowers in Australia?

Any fruitgrower who knows his business must be of the same opinion as myself. The industry is being practically ruined owing to Government control of sugar.

Were you as successful at the recent conference of fruitgrowers as at the conference held a year previously?

At the last conference the Minister practically bluffed the growers.

Did you not stand virtually alone regarding your belief based upon Government control of sugar?

The growers asked the Minister for a pool, and while asking, mentioned the effect of sugar control. *The Minister asked whether they felt that the Government was under an obligation to give them a fruit pool because of the sugar situation. He spoke in a tone which amounted to a threat. It was not what he said, but the way in which he said it, that caused them to give him practically the answer he wanted.*

You say that the reason why you desire a fruit pool for this season is due to the Government control of sugar?

It is.

Did not the growers have their opportunity to secure the right to import their own sugar when the Minister said, in effect, "You can either have a pool, with Government control, or you can have a free hand in respect of the purchase of sugar for your trade?"

That was never offered to us. After the conference, the Minister said, "I was going to say that we would have given you the cheapest sugar in the world for the export of your fruit."

What offer was made to you?

None.

By Mr. Bayley: You said that the price paid for Apricots was £9/6/8 per ton, and that as much sugar as fruit goes into a ton of jam. The two ingredients would cost £55/8/2. What else is there in a ton of jam?

That is all.

You attribute your condition solely to the price of sugar under Government control?

The bulk of our difficulties is due to the cost of sugar to the jam and preserve manufacturers. The sugar per ton of jam costs ten times as much as the fruit used therein. I am referring in this latter connection to Plum jam. The interest charges upon sugar alone used in the manufacture of a ton of jam, if the manufacturer had to carry that jam for twelve months, would be equal to 69 per cent. of the value of the fruit.

Before the days of control what was considered a fair nett profit in respect of soft fruit orchards?

About £5 to £10 per acre.

What is the nett profit to-day?

There is none.

By Senator J. D. Millen: Do you know whether conditions in Tasmania are as bad as you represent them to be in Victoria?

I believe they are.

By Senator J. D. Millen: If the price of sugar were satisfactory what percentage of fruit from your own orchard would go into the manufacture of jam and preserves?

Probably 70 per cent. of the fruit we produce would go into cans. Last year under the pool, about 1,000 tons of fruit went into cans, and our total production would probably be about 1,400 to 1,500 tons. That is to say, 66 per cent. of our output was used for jam or preserves.

By the Chairman: Is the bulk of the fruit grown in your district soft fruit for jam making?

Yes; and canning. We do not grow Apples.

By Senator J. D. Millen: If you expect your orchard to produce 30 per cent. by way of fresh fruit, and 70 per cent. for the manufacturer, are we to understand that if the whole of the 70 per cent. is not absorbed the excess gluts the fresh fruit market, and so spoils it for your percentage of fresh fruit?

That is so.

The witness withdrew.

Deadly Tomato Disease.

A well-known seedsman in New South Wales writes, under date August 18:—"I have had two wires from big Tomato growers in the Gosford district this week to the effect that all their Tomato plants were dead (spotted wilt, I presume). Our own were never so free as last week, but are all gone now. If it costs the Commonwealth **£50,000 to find a remedy** it will be worth while.

"To give you an idea of the magnitude of the industry, I sell enough seeds of two popular varieties alone to produce nearly two million plants, and sell about 36 varieties in all. I would not be by any means the largest retailer in this State, probably about average."

The Pollination and the Fertilisation of Fruit.

By CECIL H. HOOPER.

(Member of the Scientific Committee of the Royal Horticultural Society.)

Pollination and Fertilisation.

The following article, which appeared in an English journal, should be of interest to our readers. It will be noted that the varieties mentioned are chiefly those grown in England, but the conditions regarding want of pollination apply equally to Australia.

Almost without exception, for our fruits to mature it is essential that pollen be carried from the anthers to the stigma or stigmas of the pistil of the flower.

Wind and insects are the carrying agents of pollen. Wind conveys the dry, powdery pollen of cob, filbert and Hazel nuts and Walnuts.

In the case of Strawberries (if the weather is sunny) wind appears to be able to carry the pollen sufficiently for perfect fruit to mature, even with insects excluded. In all our other hardy fruits, insects appear to be neccssary to transport the pollen to the stigma for fruit to be able to mature.

In Gooseberry, and Red and Black Currant, the pollens are spherical and glutinous, like miniature boiled sago, and all these require insects to transport the pollen to the stigmas.

In Raspberry and Loganberry, the fruit does not mature as perfectly with insects excluded; if insects are excluded by muslin bags the fruit is somewhat mis-shapen and dwarfed.

In Plum, Cherry, Apple and Pear, one might expect that their somewhat dry, powdery (date-stone shaped pollen) might be sufficiently transferred by the wind; but experiments in Australia, America and England by the use of microscope slides painted over with vaseline or glycerine to catch the pollen, placed at different heights and distances from trees in full bloom, these on examination have shown but few pollen grains. Also, when trees are surrounded with muslin screens to exclude insects, permitting, however, movement of the air, even with self-fertile varieties as Victoria Plum, the trees either matured no fruits or only one or two fruits, as compared with hundreds of fruits in similar trees not enclosed, open to the visit of insects.

Strawberries, Raspberries, Loganberries, Gooseberries, Red and Black Currants are all perfectly self-fertile, i.e., mature fruit perfectly when pollinated with pollen of the same variety or the same flower, at any rate from a fruit point of view. Whether for seed, crossing may be beneficial, I have not had experience of this.

In the majority of the varieties of Cherry Plum, Apple and Pear, we have the phenomenon of self-sterility, i.e., fruit may set but will not mature when pollinated with pollen of the same flower, the same tree, or that of another tree of the same variety; and in the case of the Cherry inter-sterility has been observed, especially in America, thus a certain variety will not fruit with pollen of a certain other variety, i.e., some varieties will not cross-fertilise.

In revising this article, I thought it best to attempt to make a summary of the results of pollination trials of the Royal Horticultural Society and John Innes Horticultural Institution, as recorded in their reports, as well as results of my own trials, in order to try to arrive at more complete information.

Apple "Richard Graft" grown at Glen Innes (N. S. W.) experimental farm.

Cherries.

In the different varieties of Cherry, self-sterility is very common. The true Morello Cherry and the little Wye Morello Cherry are, however, perfectly self-fruitful, and are probably neither of them benefited by cross-pollination. Flemish Red, Roundels, Turk, Late Duke, Circassian, Elton and Napoleon are somewhat self-fruitful, and to a still smaller degree are Archduke and Mayduke, but probably none except the Morellos and possibly Flemish Red are safe to plant in quantity in block.

Varieties that appear to be absolutely self-sterile include:—Amber Bigarreau, Black Eagle, Black Heart, Black Tartarian, Early Rivers, Frogmore Bigarreau, Governor Wood, Kentish Red Preserving, Knight's Early Black, Waterloo, and White Heart; but far more orchard experiments are needed in the case of Cherries, especially as it is possible to have two varieties of Cherry in an orchard, in which A will cross-fertilise B, but the pollen of B will not fertilise A, so that the inter-planting of three varieties rather than two may be advisable.

Plums.

In the case of Plums, a few varieties appear to be quite self-fruitful, such as the Yellow Pershore Egg and the Pershore Purple, and to a lesser degree Victoria, Denniston's Superb, Monarch, Czar, Cullin's Golden Gage, Yellow Magnum Bonum, Gisborne, Golden and Early Transparents, Prune Géante, Belgian Purple, Belle de Louvain, Prince Englebert and Reine Claude de Bavay. Less self-fruitful still appear to be Rivers' Early Prolific, Cox's Emperor, Early Orleans, Farleigh Damson.

Among the apparently absolutely self-sterile varieties may be mentioned:—Admiral, Black Diamond, Bryanston Gage, Coe's Golden Drop, Frogmore Damson, Grand Duke, Early and Old Greengages, Jefferson, Kirke's Blue, Pond's Seedling, Reine Claude d'Althan, Washington and Wyedale. In plantations of all Plums except, perhaps, the two Pershore Plums, it is recommended to interplant two or more different varieties.

Apples.

In Apples, no variety appears to be sufficiently self-fruitful to allow it to be planted alone in block.

Most varieties are absolutely self-sterile or nearly so, a variety that only matures one fruit out of 100 or 1,000 flowers is for practical purposes self-sterile; in this category may be placed: Cox's Orange, Beauty of Bath, Lane's Prince Albert, Gascoyne's Scarlet, Royal Jubilee; even popular sorts, as Worcester Pearmain and Bramley's Seedling rarely mature fruit with their own pollen.

In Apples, nearly half the varieties appear to be absolutely self-sterile, or self-sterile for practical purposes, and it is always advisable to plant two or more varieties in an orchard or garden. John Downie Crab in a garden appears to be a good polleniser for other Apples and has abundant pretty fruit. For Cox's Orange, which is practically self-sterile, Worcester Pearmain is frequently planted as being a good polleniser for this variety.

Pears.

In Pears, fewer varieties appear to be self-fruitful than with Apples. The most self-fruitful Pear seems to be Conference, but even this should not be grown alone, Durondeau follows with Williams Bon Chretien and Dr. Jules Guyot; other varieties that have shown themselves in experiments occasionally self-fruitful include Triomphe de Vienne, Petite Marguerite, Colmar d'ete, Marguerite Marillat, Duchesse d'Angouleme, Pitmaston Duchess and Doyenne du Comice, but it is rare in these last two.

With Cherries, Plums, Apples and Pears, in choosing varieties to plant together in an orchard or plantation, avoid planting a very early flowering variety with a very late flowering kind;

but preferably choose another early flowering or mid-season flowering kind to plant with it; in the same way, in planting a very late flowering variety, choose another late flowering or mid-season variety to plant with it, rather than an early flowering sort in order to give the best opportunity for cross-fertilisation.

In America, it seems to be proved that in Apple varieties and in Cherries, there is preference as to pollen, that is to say, two varieties, A and B, may fruit better where interplanted than, say, A with C. In England, Green Gage Plum and Pond's Seedling Plum, even when with other different varieties, will crop better in one orchard than in another. I think there is in some cases preference in pollen, but it is one of the many economic and interesting points in fruit pollination upon which we want more information. Fruit pollination trials are easily made and cost very little in apparatus, but need care in recording and much patience, as weather, accident, etc., are liable to cause disappointment, but the results are almost as fascinating as a fairy tale, as one can foretell nothing, and the results with even two apparently similar varieties may be quite different.

PROTEST AGAINST INSPECTION FEE AND HIGH FREIGHT.

The following resolutions were recently passed by the Export Committee of the Melbourne Chamber of Commerce:—

"That we (the Export Section of the Chamber of Commerce) emphatically protest against the extension of the system of inspection fees by the Minister for Customs. Further, we view with alarm any new tax, such as that recently imposed on fresh, dried and canned fruit and jams, as we believe the production of fruit and the canning industry is threatened with disaster unless export trade is increased. As all additional charges lessen the prospect of success, we appeal to the Federal Government to rescind all fees recently imposed and the new regulations, and thus assist orchardists, many of whom are returned soldiers."

"That this Committee strongly supports the request made by the fruit-growers for a substantial reduction in freights on fruit, realising that it is impossible for fruit to be sold in London at pre-war rates, while the present rate of frieght is double."

Copies of these resolutions were sent to the Prime Minister.

DISPLAYING AUSTRALIAN PRODUCTS IN HOLLAND.

A letter is to hand from the Foreign Relation Office in Amsterdam, Holland, to the effect that their office makes a feature of exhibiting free oversea produce. Samples of Australian agricultural, horticultural, and mineral products forwarded to them will be effectively displayed and brought under the notice of the trades interested in Holland.

BLACK END OF PEARS.

Pears are not infrequently affected by "cork" in much the same manner as Apples, showing internal brown spots in the flesh and around the core, but the trouble is not as common or serious as in the case of Apples, states a report of the Oregon Agricultural College, Corvallis, Oregon, U.S.A. In the hotter and drier sections of Oregon, Pears, especially the Bartlett, may be affected by what, for want of a better term, we may call "black end." It is characterised as shown in illustration on this page by a black discolouration of the skin, which makes its appearance close to the calyx end and may extend backward until in extreme cases nearly the entire surface of the fruit may be affected.

"BLACK END" OF PEARS
Illustration from Oregon, U.S.A. Agricultural College.

Fruits showing this trouble are usually abnormal in shape, being rounded at the calyx end instead of depressed. The flesh is involved only to a very slight extent, but the affected skin and the layer of flesh immediately beneath become hard and dry, and may crack as shown in the illustration. The blackened region usually merges indefinitely into the healthy skin, but sometimes there is a definite margin and the blackened portion becomes slightly depressed. Every effort to discover a parasitic organism in the diseased tissues has failed, and all the circumstantial evidence points to the probability that excessive evaporation in hot weather or insufficient soil moisture are responsible for its development, since it appears usually on soils either unfavourable for root growth or unretentive of moisture or both.

PRESERVATION OF FRUIT DURING COLD STORAGE AND TRANSIT.

Commenting on the above article, which appeared in our August issue, Mr. N. H. Case, of Batlow, N.S.W., writes as follows.—

It appears from Mr. Walker's article on Fruit Preservation that inasmuch as decay is caused by bacteria, and that bacteria cannot exist in ozonified air, fruit stored in such air must keep indefinitely.

It would be interesting to learn if it is claimed that the presence of ozone prevents or retards the normal life processes of ripening and ultimate collapse. If not it is an adjunct to cool storage not an alternative.

As a sufferer from unsatisfactory export conditions during the past season I am of opinion that the trouble lies in (1) lack of air circulation refrigeration (2) insufficiency of battens, (3) temperature variation.

TASMANIA

Meeting of Apricot Growers :: Advertising the Sturmer Apple
Codlin Moth :: News and Notes

By our Tasmanian Correspondents

Meeting of Apricot Growers.

Some two months ago the apricot growers of Southern Tasmania appointed a committee to watch affairs with regard to the disposal of next year's crop. The committee consisted of Messrs. M. Leonard (New Town), who was appointed chairman, J. Murdoch jun. (Craigow), A. Dickenson (Granton), A. W. Martin (Glenorchy), and W. Forsyth (Austin's Ferry). On September 15th a goodly number of growers assembled at the Masonic Hall, Hobart, to further consider the matter. Mr. A. B. Crowder (secretary, Port Huon Fruitgrowers' Co-op. Association) acted in the capacity of secretary to the committee.

The question of installing a dehydration plant was gone into. It would cost something like £5000 to instal such a plant capable of treating 160 tons of fresh fruit during a season of three weeks. The initial cost rendered the idea impracticable from the growers' point of view. The apricot crop last year was approximately 3,000 tons, the dehydration suggestion was accordingly turned down.

A canning plant to treat 400 tons also would cost about £5,000.

Sir Henry Jones and Mr. J. P. Piggott, M.H.A, who were present, addressed the meeting on the various aspects. It was generally agreed that this year the apricot crop would be but from a fair to light one, and therefore the percentage of canning apricots would be good, leaving a smaller percentage than last year for jam-making purposes.

After a good deal of discussion the following resolutions were carried:—

"That this meeting requests the State Advisory Board to ask for Commonwealth assistance in financing the next season's apricot crop."

"That the Port Huon Fruitgrowers' Association be asked to instal a canning plant."

It was further resolved, on the motion of Mr. Murdoch that the sum of 1½d. per lb. be asked as an advance price for canning apricots.

Sir Henry Jones stated that the jam factories would undertake to pay 1d. per lb. for jam apricots.

Mr. Pearsall moved:—

"That this meeting is of the opinion that a separate pool be asked for for each variety of fruit."

This was seconded by Mr, Luke Williams, and carried unanimously, it being further resolved that an advance of 1d. per lb. on plums should be asked for.

Advertising the "Sturmer" Apple.

Tasmanian fruitgrowers, in conjunction with a committee of Sydney fruit agents, have recently had a "Sturmer week" in Sydney, with a view of advertising and popularising the excellent qualities of the Sturmer Apple.

The sum of £150 was provided for the advertising, made up from the Tasmanian Government (£50), fruitgrowers (£75), and committee of agents (£25). One of the methods of advertising was by having window-dressing competitions for fruitgrowers within the metropolitan area. The 1st prize was £20; 2nd, £10; 3rd, £5; 4th, £3; 5th, £2; and ten prizes at £1 each —total, £50. Competitors were supplied with handsome showcards and "dodgers," setting forth the excellent qualities of the Sturmer apple. The dodgers were for distribution amongst the public.

Mr. J. M. Ward, Tasmanian Fruit Expert, together with Messrs. Thos. Crockett, Tasmanian fruitgrowers' Sydney representative, were appointed judges of the competition. In commenting on the various displays, Mr. Ward stated that fruiterers in practically every suburb, as well as the city proper, entered into the competition, therefore some three days were required for judging the displays. The chief feature about the displays was that they attracted considerable attention from the general public, and, whereas previously many consumers who did not know anything of Sturmers, owing to its lack of color, would, after seeing the many advertisements go into a shop and ask for "Sturmers," not apples.

One fruiterer informed Mr. Ward that he usually sold 40 cases of apples per week, but during "Sturmer week" he sold 120 cases of Sturmers during the first four days of the week.

Many comments of a similar nature were also made.

This goes to prove that, when growers have their products to offer to the consuming public, they must advertise to let the public know. Growers will be forced to go into the advertising of their fruit on extensive lines in the near future. Many "Sturmer," or "apple weeks," are required outside of, as well as inside, Australia.

"Lots of apples, fewer ills;
Fewer apples, lots of pills."

Codlin Moth.

The time for spraying for this pest will be with us in a few weeks, and, although we have been spraying for this insect for many years past, there have been more complaints during the last two years of the increase of the moth than ever before, It is remarkable how little many of our growers know of this insect pest, that is its life history, yes, and even how to deal with it.

In the course of its life the codlin moth passes through a series of transformations. The egg hatches as a grub, or lava, which cocoons, and then changes to the legless pupa, and finally emerges as the adult moth. The time required for this transformation varies with the season as well as with the individual, so that there may be two such generations of moths during the year.

In the warmer mainland States and other hot countries, they may have more than two broods, but in Tasmania it is usually one. The first moths of the season appear shortly after apples blossom and lay their eggs near the young fruit. The grubs begin to hatch two to six weeks after blossoming time, according to weather conditions. When the grub emerges from its egg shell, it is small, delicate, and hungry. It seeks about for shelter and for food; the blossom end of the apple provides both, and attracts a good percentage of the grubs, whether early or late in the season. They seem to be instinctively directed to the calyx cavity of the fruit, due no doubt to the absence of a tough skin, and the presence of the nectaries at this place. When the eggs are deposited upon the foliage of the tree, which is often done, the young grub will nibble and consume portions of the leaves. Other will eat their way through the side of the fruit.

Where two apples meet, or where a leaf overlaps an apple, the grub will begin feeding. If this meal proves to be tough or unpalatable, it is rejected, the grub working it out of its mouth by emitting some silk from its mouth glands. This habit seems to have a most important bearing on the value of later sprayings in protecting the fruit. The object of spraying is to coat the food of the newly-hatched grubs with poison. Since so many grubs attack the apple at the blossom end, it is advisable to fill this part of the fruit with poison (arsenate of lead). This can be done only during the week or ten days immediately following the blossoming period before the calyx lobes fold over.

The spraying should be followed up about three weeks later, and again at a further interval of three to four weeks. Each spraying should be well carried out so that every apple or pear becomes covered with a coating of the poison.

NORTHERN TASMANIA NOTES.

Northern Tasmania is very much in need of a good soaking rain. The past winter has been one of the driest on record, and, although crops are looking well, there is need of a good fall to thoroughly wet the subsoil. in order to carry them through the drier months.

Orchard Intercrops.—This is a very important subject to the man who is establishing a fruit area, especially in the case where there is a pressing need for an income during the younger stages of the orchard's life. In many cases which have come under my notice intercropping of young orchards has been a great benefit.

Before making any planting, however, careful inquiries should be made as to the soil fertility and the condition of the young trees. Climatic conditions and marketing prospects must also be taken into consideration. A number of crops may be successfully grown, but preference should be given to those that have a low growing habit.

The growing of cereals or hay as intercrops is very strongly condemned. The demands made upon the moisture content of the soil and the lack of tillage will have a decided effect on the trees' growth, and often retard and stunt them. Potatoes, green peas, onions, carrots, beets, tomatoes, etc., are desirable intercrops and the necessity for ample manuring and requisite tillage will be beneficial to the orchard trees.

Strawberries, gooseberries, black and red currants and Cape gooseberries are amongst the best of the small fruits, and there are many plantations in Tasmania that have had to depend on these as the only source of revenue until the orchard was in bearing. As a means of keeping the soil stirred when it might otherwise be neglected intercropping gives an indirect benefit.

State Advisory Fruit Board.—The Minister for Agriculture (Hon. J. B. Hayes, C.M.G.) has appointed the newly-elected Central Fruit Committee and three other fruitgrowers from districts that were not represented on the Committee to act as producers' members of State Advisory Board. The members will select from their number those that are to act on the Federal Board.

The members of the new State Advisory Board are:—A. Boatwright (Latrobe), N. Campbell (W. Tamar), H. D. Calvert (Huon), A. Davies (Cygnet), T. J. Eddington (Bagdad), F. Heyward (Launceston), B. J. Pearsall (Kingston), V. W. Shoobridge (New Norfolk), growers' representatives; and Sir Henry Jones, J. P. Piggott, and V. J. Skinner as manufacturers' and exporters' representatives.

Fruitgrowers are generally alive to the necessity of a Federal and State organisation of the industry and welcome its inception; at the same time a good deal of criticism and dissatisfaction is evident in regard to the status and representation that is apportioned to deciduous fruitgrowers (apples, pears, etc,) in comparison to other branches. On the Federal Board the exporters and growers of "green or fresh" fruits occupy a big place in the fruit industry, and it is considered that they should have a more proportionate representation.

Motor Traction and Haulage.—The number of motor vehicles that are used in collecting and forwarding fruit to the ports of shipment are increasing, and are proving serious competitors to rail and water carriage. The great advantage lies in the ability of this class of vehicle to collect at the orchard shed, also there is an eliminating of handlings.

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TASMANIAN AGENT
THE PORT CYGNET FRUITGROWERS' CO-OPERATIVE ASSOCIATION LTD.
CYGNET

Plum Shipments Overseas.—In spite of the bad results experienced last year, several plum growers are expressing their intention of preserving and forwarding consignments next season if suitable conditions of carriage are available. Selection will be limited to Coe's Golden Drop, President, Grand Duke, and Satsuma. Information from South Africa shows that several of the "gages" carry well and command good prices. It is intended to forward trays of Bavay and Jefferson in this respect as an experimental shipment.

Early Cultivation.—Too few fruitgrowers realise the necessity for early cultivation and bringing the surface soil to a good tilth as early in the spring as is possible. The fruit tree makes its strongest demands on the soil during the early growing period, and it is necessary that it receive all the help possible from efficient tillage at that period in order to make good development and to set and mature the crop. The grower that leaves this important work until late in the season misses the strongest growing period and runs a grave risk of having a small setting of fruit. In a dry season this factor may mean the difference between success and failure.

Port Huon Co-Operative Association.

The annual meeting of shareholders of the Port Huon Fruitgrowers Co-operative Association Limited was held at Hobart on August 21st, Mr. H. D. Calvert presided over a large attendance.

The annual report stated that of a subscribed capital of £21,446, the paid-up amount was £10,588. The profit for the year was £5,903. Of the latter sum it was requested that £4,000 be capitalised by issuing bonus shares and placing a further sum of £1,500 to general reserve. The turnover was £328,000.

The Association shipped to England 263,000 cases, and, up to June 30th, 1922, 280,000 cases were sent to interstate markets, including 150,000 direct from the Huon.

The sale of fruit in interstate markets through committees of agents was working satisfactorily. Mr. H. M. Scott performed useful work in representing Tasmanian growers in Sydney. On his going into business on his own account, Mr. Crockett was appointed, and his services were satisfactory.

Following the passing of an Act, which provided a penalty for rough handling of fruit, and educational propaganda, the fruit was now handled much better. The several packing sheds were working satisfactorily. New districts were proposed to be served with packing sheds.

Small and Stone Fruits.—The Association dealt with 1,700 tons of raspberries and currants, advancing the growers 3d. per lb., involving £90,000 in finance. The Commonwealth Government guaranteed £20,000, which has been repaid. Three factories operated, viz., Hobart, Huonville, and Castle Forbes Bay. Next season a factory at New Norfolk will operate.

Australian Fruit Pool.—If the Commonwealth Government had not granted this pool, those engaged in the apricot, plum, pear, and gooseberry industries would have suffered a severe setback. While the Commonwealth Government kept sugar under control, it was only equitable that they should also take under their protection the manufacturing side of the fruit industry, which has undoubtedly suffered through such control.

AUSTRALASIAN FRUIT IN ENGLAND.

The Necessity for an Advertising Campaign.

In a recent report, F. W. Moore and Co. Ltd., of London, write as follows:—

With the arrival of the s.s. "Baradine" on July 16, the 1922 Australasian Fruit Season (Citrus fruits of course excepted) comes to an end. Upwards of two million cases of Apples will have been brought from Australasia for the season; the ships' manifests show 2,020,991 cases of Apples and 153,000 packages of Pears. It is usual to reckon two packages of Pears as the equivalent of one case of Apples; on that basis the grand total is 2,097,491 Imperial bushels of fruit and, taking the average nett weight as 40 lb. per bushel, we get a total of 83,899,640 lbs., slightly over 37,455 tons, but as some of the Pears are the actual equivalent of a case of Apples in size and ship measurement when three trays are cleated together, and there were also some consignments of Grapes, Peaches, Plums and Passion Fruit, we may fairly increase the above figures to 84 million pounds weight of fruit, which works out to 37,500 tons. They represent in all two million two hundred thousand (2,200,000) cases, the freight on which at six shillings (6/-) per case, amounts to £660,000, and as several of the steamers landed their cargoes in more or less bad condition, it cannot be said that this large sum of money has been well earned.

The total Australasian shipment if worked out per head of the population of Great Britain, may not be regarded as very large, but it must not be forgotten that, during the same period, there have been considerable quantities of Apples from Canada and the U.S.A., fruits from the Union of South Africa, Oranges from Spain and Italy, Bananas from the West Indies and the Canary Islands, Pineapples from the Azores, and, towards the end of the season, Apricots, Peaches, Gages and Cherries from Spain and France, Home-grown Strawberries and Cherries, one or other always in competition. And, whilst the Australasian total has been so much larger than before, the season has been more prolonged, the demand stronger, and prices for sound fruit better right to the end. This seems to indicate a growing habit of fruit-eating which, beyond a doubt, may be greatly increased by judicious advertising that will most assuredly teach the Masses, as well as the Classes, to regard fruit as a necessity instead of a luxury only. Advertising will make clear to everyone that fruit is Nature's corrective and remedy, far more agreeable to the palate and system than pills and potions, salts and senna, more effective if eaten frequently, preferably before instead of after the ordinary meals of each day.

The large posters brought out and exhibited on hoardings everywhere during the latter part of the season, and smaller ones distributed amongst retailers by the National Federation of Wholesale Fruit Trades' Associations attracted great attention, and undoubtedly increased the demand; it may not be too much to say they helped very materially to sell so much fruit at a so much later period of the season than usual. Whilst posters have materially helped the sale of the fruit, newspaper advertising would certainly do much more, and we strongly advise every grower to contribute at least one penny per case to the fund. The brochure entitled "Bigger Business," which we sent to some 1,200 fruitgrowers, has also been spread broadcast throughout Great Britain, and already there are good prospects of £100,000 being handed to the National Federation to spend on advertising fruit and vegetables. This sum does not include anything from Australasia. It will stimulate the general demand during the next nine months, thus working silently for the cause, and Australasians should recognise it by contributing during their season to keep the ball rolling.

Commenting on the bad condition of fruit on some steamers, Messrs. Moore and Co. Ltd. state:—

So far as our own observations go, we may say that the trouble does not occur in ships where the system of cooling the holds is by means of batteries and fans which circulate cold air throughout the holds, but where the cooling is by radiation from the brine pipes in the holds and there is no change or circulation of the air, the necessary supply of oxygen becomes exhausted and carbonic acid gas gains ascendency, with the result that the Apples become suffocated in their own exhalation.

'Phone, Central 8479

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Fruit Importer and Exporter

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49 WILLIAM STREET, MELBOURNE, VIC.

Solicits consignments of APPLES, ORANGES, BANANAS, PINES and all other fruits.

Account sales with cheque daily.

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Large Receivers of Australian Fruits.

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Apples, Pears, &c.

Best market prices and prompt account sales returned

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REPRESENTATIVE IN VICTORIA

THE

International Fruit & Mercantile Co.

410 Flinders Lane, Melbourne

TASMANIA

MURDOCH BROS., Hobart

COMMENTS ON 1922 AUSTRALIAN FRUIT SHIPMENTS.

In a letter to Mr. J. H. Lang, of Harcourt, Vic., J. B. Thomas Ltd., of Covent Garden, London, write under date June 28, as follows:—

The fruit season just about terminating has been a disastrous one for growers in Australasia, as also New Zealand, although we can look back when it has been worse, and has been got over, it could not be any consolation to growers, the number of whom has considerably increased since then. The only thing we are concerned with is to arrive at the cause which made the bad season's results. Amongst the many suggestions which are being made, we think the chief cause has been the world drought of last year, impoverishing the keeping quality of Apples, and the accumulation of carbonic acid gas in the cool chamber of the steamers has killed the fruit, dry rot being the immediate result.

There is no doubt that the irregular temperature kept up in many of the steamers has contributed to this bad condition. Although natural causes are beyond the growers' control, the contributing causes to loss and damage can be avoided.

To maintain the industry of fruit-growing, we must have a lower freight, also some undertaking on the part of the steamers to maintain an equal regular temperature in the cool chamber carrying fruit.

Shipments of Pears should be made only under "Somerset" conditions, although the packing of Pears in trays, in some instances, have proved commendable; we think that in bulk equally selected Pears packed in cases would yield nearly the same nett proceeds, as against packing in trays, although some of the latter might find a more ready sale.

Arrivals of Pears from Australia being now brought in competition with South Africa, it might be advisable to hold back late varieties for shipment a few weeks later, so as to arrive on our markets when arrivals from South Africa are about finishing.

Cases Should be Paper Lined.

We found some cause for complaint in Apple boxes, where three slips are used with wide partitions. It is advisable, in such cases, to bind the boxes with paper lining, or corrugated paper

layers to prevent damage to the fruit from the sharp edges of the wood, damage to the fruit is avoided where the spacing is not too wide. Some instances have been noted where the boards bend inwards and damage the fruit; the papering, as suggested, would avoid all damage.

CRUDE OIL EMULSION FORMULA.

Boil 1 gallon of water with ½ lb. of soft soap or 1 lb. or hard soap, sliced up, until soap is dissolved. A piece of washing soda about the size of a Walnut may be added to facilitate emulsification.

TASMANIA

We are the Leading Australian

Fruit Exporters
Fruit Canners
Jam Manufacturers
(I.X.L. Brand)
Hop Factors
(Owning the largest cool stores for this purpose in Australia)

We stock large supplies of Corrugated Strawboard, the latest and best material for packing apples for export.; Woodwool, etc., etc.

Tasmanian Agents for Commonwealth Government Line of steamers, Federal and Shire Lines, etc.

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LONDON, E.C., 4
AND HOBART, TASMANIA

Solicit Consignments.

The High Standing and Long Experience of this Firm is a Guarantee that the Best Interests of Consignors will be conserved.

Lift off fire and add 2 gallons of crude oil, replace and again bring to the boil. Remove and violently agitate until mixture emulsifies—usually in 2 or 3 minutes.

Agitation can be got by pumping mixture through a hand spray pump back upon itself.

The foregoing formula is supplied by P. J. Carmody, Chief Orchard Supervisor for Victoria.

Ingratitude.—Don't worry about the ingratitude of other people, or you won't have time for anything else. Buy a dog. He will give you 5/- worth of gratitude for 2d. of dogs' meat.—The Efficiency Magazine.

Answers to Queries.

Raisin Des Dames Grapes not Setting.

"Grower," Ardmona, Vic., asks a question regarding his Raisin Des Dames Grapes not setting.

Answer (by F. De Castella, Victorian Government Viticulturist).—Raisin Des Dames, or Bicane as it is better known in Europe, is rather prone to faulty setting of its blossom. Whole bunches may fail to set (Coulure) or the setting may be imperfect, a few large berries and a good many more seedless ones (hen and chickens). This variety usually sets better if pruned long. With short pruning the above defects are aggravated.

Cincturing and stopping also remedy the trouble to some extent. "Stopping" the terminal bud of the shoot, about a week before blossom, may effect an improvement. The laterals which are thus forced out may bear a second crop, which usually sets properly. If the main bunches have set these should be removed; otherwise they may be allowed to remain, thus replacing the main crop.

Interpollination is perhaps the best means of countering this defect. Bicane vines growing amongst other sorts, usually set their fruit satisfactorily. Interplanting a few vines of a sort blossoming about the same time, such as Chasselas, Sultana, Black Hamburg, etc., will considerably improve the setting of a block planted with Raisin des Dames.

Answer (by V. R. McNab, Ardmona, Vic.).—Raisin Des Dames are noted for the way in which they fail to set a crop of Grapes. They have practically been discarded in this district for that reason. No special method of pruning has been evolved to overcome this, although some growers rely on pruning to leave several long canes which are then bent back to check the flow of sap.

I think the trouble will be solved best by cross fertilisation. The few "Raisin Des Dames" that I have, are stray vines mixed in with "Red Champion." These have set a crop three years out of four. They are pruned hard to ten or twelve buds each year, but in my opinion it is the cross fertilisation that sets the crop.

Late Valencia Orange.

"Grower," Quantong, Victoria, asks the following questions in regard to the Late Valencia Orange:—

1. Is this variety a prolific bearer?
2. What is the best time of the year to plant same?
3. What period of the year is the fruit ready for picking?
4. Would they be suited to the climate in the Wimmera (Vic.) district, under irrigation?

Answer (by S. A. Cock, Victorian Citriculturist).—

1. Yes; but inclined to bear a crop every other year.
2. September or October.
3. Late October to December.
4. Yes.

Answer (by C. R. Roper, Kyabram, Vic.).—

1. Yes, a heavy bearer.
2. In irrigation areas late Spring—say October and November.
3. October, November, and December.
4. Should do well in the Wimmera under irrigation, as conditions there are similar to Goulburn Valley, where Valencias do very well.

F.W. MOORE & Co.
Ltd.
Clarence House
8 Arthur St., London Bridge
LONDON, E.C.,4., ENG.

We are the largest receivers of Green Fruit from Australia, our consignments having steadily increased annually since our business was established in London in 1902. Our Managing Director has had the handling of consignments to the markets of Great Britain and Europe since 1900, and personally supervises the sale of all fruit consigned to the Company. Fruit is placed for sale in whatever markets or way (auction or private) appear most suitable, thus getting it before all classes of buyers; our increasing consignments demonstrate the success of this practice.

F. W. J. MOORE, Managing Director
Telegrams: Tirralirra London
Bankers: Bank of New South Wales

Pear Pollination.

"A. G. B.," Broadwater, Stanthorpe, Queensland, asks for the name of a good export variety of Pear to cross-pollinate with Packham's Triumph.

Answer (by E. E. Pescott, F.L.S.).—Any of the following should flower at the same time as Packham's Triumph: Beurre Capiaumont, Louise Bonne of Jersey, Winter Cole, Winter Nelis.

Answer (by C. J. Goodman, Bairnsdale, Vic.).—I would advise Josephine de Malines—one of the very best export Pears known, and which flowers very much in agreement with the Packham's Triumph.

NEW SOUTH WALES

Conference between Growers and Agents :: Fruit Shows News and Notes

FRUIT MARKETING.

New South Wales Growers and Agents Confer.

Difficulties Discussed.

Representatives of the fruit-selling agents and the Fruitgrowers' Association of New South Wales met in conference in Sydney on September 2nd. Messrs. A. W. Small (president), W. G. Roughley, F. H. G. Rogers, F. Chilton, L. Jenkins, and W. Musgrove represented the agents, and Messrs. Heane (president) Wark, Nicolson, and McMahon the Fruitgrowers' Association.

Mr. Heane said that the conference was called for an informal discussion of their grievances, with a view to arriving at a better understanding. It was proposed to ask for the registration of agents. The secretary had prepared a draft bill for submission to the Minister for Agriculture, but it was desired first to give the agents an opportunity to discuss it and to suggest any amendments.

The agents agreed to call a special meeting to discuss the bill in detail, and to forward amendments where considered necessary.

Commission or Flat Rate.

The method of selling fruit in the markets was considered at length upon a suggestion that sales be made on commission with no minimum charge. At present a commission of 7½ per cent. is charged, with a minimum of /6 per case, to which the fruitgrowers object.

Mr. Roughley said that the New South Wales agents had not raised their commission for twenty years. When it was proposed to raise the commission to 10 per cent., in conformity with other States, they compromised with the growers, and retained it at 7½ per cent., with a minimum charge of /6 a case.

Mr. Chilton said that he would agree to a minimum charge of, say, 1/3 or 1/6, and a minimum of /6. This would give the growers the benefit when fruit was high-priced, as a set-off against the charge of /6 when fruit was cheap. Mr. Rogers, who said he was opposed to the flat rate, endorsed Mr. Chilton's proposal. The agents agreed to consider the matter, and submit a proposal to the Association.

Record of Sales.

A recommendation was made that the agents keep records of all sales. It was explained that this was impracticable, as it would take too long, and would necessitate the employment of extra clerks. To do so the commission rate would have to be increased.

Mr. Roughley said that the agents would not supply the names of those to whom they sold fruit, as the growers would then get into touch with them and supply direct, and the agents would lose their business. After discussion it was agreed that the proposal was impracticable.

The Case Question.

The use of secondhand cases was discussed at length. It was stated that Tasmanian and other growers had complained that their cases had been filled with inferior fruit, but the brands had not been obliterated; consequently the buyers were misled. They had suggested that the ends of the cases be kalsomined, care being taken not to obliterate the guarantee brand.

Mr. Heane proposed that it be made compulsory for growers using secondhand cases to obliterate the brands of the previous owner. It was agreed to ask that this be made law.

The loss of empty cases was considered. It was stated that the agents collected a deposit of 1/6 per case, but did not pay this to the growers if the cases were not returned. It was agreed that the only real solution was the sale of the cases with the fruit, and the establishment of a depot to which cases could be returned and resold to the growers.

Cancelled Certificates.

Mr. Heane stated that the regulations in connection with the export of fruit to New Zealand were unsatisfactory. A clean certificate was necessary before fruit could be shipped, and the shipper had to make a statutory declaration that the fruit was grown by the holder of a clean certificate. Very often fruit was shipped in cases belonging to the holder of a clean certificate, though the fruit did not come from his orchard. If on arrival in New Zealand this fruit was found to be fly-infested, the holder lost his certificate for the season, even though he had sent no fruit away; and he had no redress, because by the time the matter was investigated the season had ended. Mr. Heane said that the agents could help by ensuring that fruit was only sent in the name of the grower of the fruit, and that the regulations were enforced.

The agents expressed surprise at the conditions that prevailed, and promised to see what they could do to remedy them.

Rail Transport of Fruit.

The system of packing fruit up in one end of a truck, as required by the Commissioners, was criticised. It was stated that unless the trucks were filled with fruit or other goods the stack was knocked down by the shunting of the train. As a result the cases were broken and the fruit destroyed. It was decided to ask the Commissioners to alter the regulations, and to allow growers to pack fruit on the flat.

It was also agreed to ask the Commissioners to make the fruit more accessible in the trucks.

Mr. Chilton referred to the careless handling of fruit sent to the country, both in the goods and passenger trains. It was decided to bring the matter under the notice of the Commissioners.

A proposal that fruit be sold by public auction was considered to be impracticable, and was turned down.

The agents expressed appreciation of the manner in which the association had approached them, and expressed the opinion that the conference would result in a much better understanding. They expressed the hope that similar conferences would be held in future.

Fruitgrowers' Association of New South Wales

A meeting of the Central Executive of the above Association was held on September 1. Present: General Heane (in the Chair), Messrs. Wark, Blowes, King, Taylor, Cowlishaw, Nicholson. (Mr. Kirkness also attended.)

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Consign to the Up-to-date and Established Firm of

TURNERS & GROWERS

— LTD. —

City Markets, Auckland New Zealand

Salerooms comprise—

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FRUIT COOL STORAGE ON PREMISES

Staff of nearly 100 Employees

Competent Salesmen only employed

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Finance.—The pool buying sales for July and August amount to £3,403/15/6. Accounts paid on the Trust Account, £2,333/15/11; General Fund, £200/17/3.

Independent Members.—It was decided that no one be accepted as an independent member if resident within a reasonable distance of an existing branch, and that the subscription fee for these members be fixed at 12/6, subject to endorsement in each individual case by the Executive.

Next Annual Conference.—A letter was received from the Bathurst branch conveying an invitation on behalf of that branch, the Bathurst Municipal Council, and the Bathurst Progress Association, to hold the next Annual Conference at Bathurst.

Before accepting this invitation it was decided that a communication be forwarded to the Tallong branch to find out if an invitation is likely to be received from Goulburn.

Fruit and Vegetable By-products Limited.—The secretary reported having been in communication with the Federal Government to assist this company in its efforts to have a protective tariff placed on Australian essential oils.

Agents' Registration Bill.—The secretary reported that every effort had been made to have the provisions of the Real Estate and Stock Agents' Bill extended to include Fruit and Vegetable Commission Agents. Interviews had been held with several members of Parliament and the Department of Agriculture, but it was agreed that it would be advisable to provide a separate Bill to cover these agents.

The secretary also reported having drafted a Bill which was read and discussed.

Experiments in Cool Storage of Citrus Fruits.—The secretary reported that fruit had gone in from all the districts with the exception of Gosford and that he had attended with the officer from the Department of Agriculture each Monday morning to look at the fruit. The only fruit showing signs of breaking down is the Thompson Improved Navels.

Plant Diseases Bill.—The secretary reported that there is every indication of the Plant Diseases Bill going before Parliament during the present session.

Markets Branch Department of Agriculture.—The secretary reported having attended the conference convened by the Department of Agriculture to discuss the question of the establishment of a Markets Branch of the Department. A general discussion took place at the conclusion of which the Minister asked the various organisations represented to consider the matter and submit their proposals.

Rail Freights.—Mr. Blowes (Orange) and the secretary were delegated to wait on the Railway Commissioners with reference to this matter as early as possible.

Orchard Tax Bill.—Mr. Kirkness attended and reported having interviewed the Department of Agriculture with reference to this matter. He suggested amending the name of the Bill to Orchard Registration Fee Bill. It was estimated that the income at the rate of 6d. per acre would be about £3,500, and the cost of collection £200.

Conference with Agents.—A conference was held between a committee representing the Executive and a committee representing the Commission Agents at both markets to discuss a number of problems connected with marketing. Several important matters were discussed, which are reported elsewhere.

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WADE
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FRUIT MERCHANTS
Prompt advices of sales
Cheques Weekly

435 FLINDERS LANE
MELBOURNE

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Opposite Western Market

THE HILLS DISTRICT OF NEW SOUTH WALES.

Annual Show.

Splendid Display of Citrus Fruits.

The "Hills Districts," which include Galston, Glenorie, Kenthurst, Arcadia, Baulkham Hills, Castle Hill, Dural, Middle Dural, Pennant Hills, and other centres, and is generally known as the home of citrus growing in N.S.W., held a successful annual show at Galston on September 8th and 9th. About six hundred entries were received, this number being a considerable advance on last year's effort, and the judges stated that the quality of the fruit has never been excelled.

A feature of the show was the district competition, the produce from the various centres (mostly citrus fruits) being arranged in trophy form, of which there were six, one being non-competitive. Sixty points were allowed for quality and forty for arrangement. The results were as follows:—

	Quality	Arrangement	
Glenorie	55	35	90
Galston	45	33	78
Arcadia	40	31	71
Kenthurst . . .	39	30	69
Dural	35	20	55

The fruit exhibits were of a high and even quality, and the judges (Messrs. F. Chilton, B. G. High, and J. Neil, all veterans in the industry) had difficulty at times in placing the awards. The following were the principal prize winners in the other sections:—Messrs. G. Deahan, G. H. Parker, W. D. Wrench, Bevan Bros., H. W. Mobbs, Heane Bros., W. A. Cross, J. Hutchinson, S. W. Fagan, J. Goldberg, E. & W. B. Thomas, W. Carpenter, T. Hemers, H. S. Moore, G. H. Baker, S. J. & F. Black, J. Shore, jun., F. A. Nicolson, and T. W. Vaughan.

There was also a fine collection of wild flowers and preserves, in addition to a section for the children, all of which attracted much attention.

CITRUS SHOW AT LEETON, N.S.W.

Big Attendance and Good Entries.

The annual citrus and spring show of the Yanco Agricultural Society was held at Leeton on September 2nd. There was a good attendance, and the show was successful from every standpoint. A good display of citrus fruits was made, but the entries were not as large as anticipated. The judging was carried out by Mr. E. L. Archer, of Dural, who spoke very highly of the fruit exhibited. He regretted that the Leeton growers had not sent a better sample of citrus fruits to the recent big Sydney citrus show.

The competition for the citrus championship of Australia was very keen, there being 24 entries. Mr. F. H. Goodhew (Leeton), secured first prize with 76 points; Mr. A. D. McKellar (Leeton), second prize, 74 points; and Messrs. McKillop & Sons (Narromine), Mangrove Packing Co., and A. D. McKellar (second entry) tied with 71 points for third place.

Prizes were also secured in the various sections by the the following:—Messrs. H. Stevenson, R. Tiffen, J. Bradv, R. B. Dickison, P. Gersbach, R. M. Harrison, J. R. Oag, C. W Ziele, F. D. Inman, F. Lyne, G. H. Carlson, J. Hetherington, A. Chant, J. A. O'Callaghan, J. Stackpool, V. Harris, and A. C. Smith.

Soldier Settlers.—A select committee has been appointed by the N.S.W. Legislative Assembly to enquire into soldier settlements. Col. Rutledge is chairman. Visits of inspection will be paid to the various settlements.

Government Enterprises.—The recent enquiry in Sydney re the N.S.W. Government Trawling industry revealed unsavoury dealings. The report of the Commissioner states there was such gross negligence surrounding a contract involving a loss of £18,000 that it raised a suspicion as to whether it was due to negligence only. The credibility of the manager of the department was seriously doubted and he was discharged.

Batlow.

The next annual horticultural show is to be held on Tuesday and Wednesday, March 20 and 21, 1923.

THE AUSTRALIAN CITRUS GROWER

Collar Rot of Citrus Trees

Methods of Combating Same.

The malady known as collar rot of citrus trees has of recent years been very much on the increase, more particularly in districts where the rainfall has not been consistent, extremes in weather conditions being most favorable to its development, writes our Queensland correspondent. Various writers on the subject attribute its presence to different causes, but are all agreed that it is the effect of fungi.

Seedling Orange—Tree opened out at roots and treated for Collar Rot.

The Bigardi or Seville type (which includes the variety known as Poorman's Orange) has been cited by the American authorities as being immune, and consequently the most suitable stock, but experience in Queensland is to the contrary—though it is found that the Seville, Shaddock and Bergamot Lemon are more resistant than the sweet Orange, Mandarin, Lemon or Lime.

In all varieties the nature of the soil in which they are grown has an appreciable influence, as does also the regularity or otherwise of rainfall. Trees grown in deep volcanic soil, and those contained in good deep soil in comparatively dry areas are least frequently attacked. Incidentally, the quality, in all respects, of fruit in the latter is superior.

When noted in the early stages the disease is not very difficult to combat, but where allowed to obtain a firm hold upon developed trees, much labour is entailed as the infection may extend to fully 18 inches beneath the soil surface. With a view to demonstrating the efficiency of thorough treatment of developed trees in various stages, and also prevention of those not previously attacked, which occupied original places of destroyed trees, the Queensland Department of Agriculture is working a demonstration plot in the Burrum district. Amongst the old trees (seedling Oranges) the soil has been removed to a depth of 18 to 24 inches around their bases, over a diameter of about 5 ft., or, as far as infection was noted. Infected roots are cut clean away and the bark of stems removed to a good, sound margin, and exposed parts painted with Bordeaux paste. Where infection was well advanced and reflected throughout the branches, the trees were severely headed back; where less pronounced, the soundest branches were allowed to remain. (Roots are left exposed. The illustrations which appear on this page show surfaces where roots have been cut away: the margin of surface from which decayed bark has been removed from the stem bases may also be noted.)

Recently a disease similar in effect has been noted in Custard Apples. It is found that cutting away the diseased bark and subsequent exposure effect a cure. As surface roots are much less plentiful than amongst citrus this is not a tedious task. With the latter, much time and labour are involved, particularly amongst varieties which dominate the stock to the extent of a very close root system. Amongst some hundreds of trees, the roots of which were examined after the stumps had been pulled from the ground, it was noted that though the fringe of surface roots—extending to a depth of about 15 inches—may be wholly or partially destroyed, and the bark of the stem from the ground level to the same depth in a similar condition, that the tap root (attenuated on account of surface development) came out quite sound—though it had been extracted from a depth of 6 to 8 feet. The inference is obvious.

Seedling Orange, badly affected with Collar Rot. Tree headed back and treated to check the disease.

In a deep soil (citrus should be planted in none other) surface roots should not be allowed to develop. They are seldom, if ever, present when the tree is planted, and if their absence is made

perpetual the treatment of collar rot will be a small matter, and what now takes hours to accomplish, could be effected in a few minutes. An official promulgation some time ago advocated deep planting (6 inches below the original depth), presumably to prevent surface root development, but as there is no more certain way of encompassing destruction by rot, the effect of its adoption was in most cases recognised.

NEW GRADES FOR CITRUS FRUITS IN SOUTH AFRICA.

The new regulations for marking grades of Oranges are now in force. There will be three grades, known as "Fancy," "Choice," and "Culls." Only "Fancy" and "Choice" can be exported.

Those packers who do not wish to discriminate between the very best Oranges, which would be marked "Fancy," and the second grade, which would be marked "Choice," should mark the boxes all as "Choice." No Oranges under 70 per cent. colour will be passed for export. The size of the Orange has nothing to do with whether they are "Fancy" or "Choice" grade. All boxes must bear the grade of their contents on the end of the box underneath the "variety" mark. Every box must weigh not less than 75 lbs. when railed.

. . . . .

Quality of 1922 Citrus Exports.

The quality of the citrus fruit exported this year was anything but creditable to South Africa, states the annual report of the Secretary for Agriculture. A certain amount of speculative export, due to high prices which ruled in England, accounted partly for this. It has to be admitted, however, that there is far too much carelessness in handling, packing and transporting fruit. The labourer, probably, has little perception of the amount of care required, and many growers do not appreciate the necessity for taking even reasonable precaution against injuring the rind or for properly selecting and grading their fruit. There was also undue haste in sending shipments, regardless of the state of ripeness reached.

This season three instructors were appointed to visit exporters and show how grading and packing should be conducted; but it is apparent that a great deal of instruction will be necessary before a fair standard is attained. While the Department is prepared to give advice, it is at the same time in the interests of the export trade to ensure that that advice is followed; and it is therefore proposed to introduce more stringent export regulations and to administer these in such a way as to establish a good reputation for South African citrus fruit.—"S.A. Fruitgrower."

Packing Fruit.

Schools Established for Apples and Soft Fruit.

The shortage of fruit packers throughout Victoria during the past season was a matter of considerable anxiety to fruit exporters. It is pleasing to note that attempts are now being made by some of the district packing sheds to obtain more competent packers by means of packing schools. Mr. Basil Krone, Government Fruit Packing Instructor, has been interesting himself in this subject, and writes:—

"A fruit packing class was recently formed at Hastings, and as far as I am aware is the first of its kind in Victoria. As far as beginners are concerned, I am in favour of the school principle as compared with the system of giving demonstrations.

"There were 22 pupils at Hastings, consisting of young men and women, about half of each, whose ages varied from 14 to 20 years. The school lasted for one week. Interest was maintained throughout, and even more so towards the last day. It was noted that the packers became more competent each day.

"For the packer to attain to any degree of efficiency, schools should be conducted for about a week and by that time, under the simple method of teaching, the most inexperienced can become proficient packers, otherwise in the ordinary way they need one or two fruit seasons of practice before they become at all expert.

"If each fruit district took this matter up similar to Hastings, it would not be long before Victoria held her own as far as the standardisation of her fruit packing is concerned.

"It has been suggested that a good idea would be to give each packer throughout the State a certificate of efficiency as soon as he or she became proficient. By this means the employer would know when engaging a packer, that only the standard packs would be adopted. This would also be a credential to the packer when seeking employment.

"In addition to Hastings adopting a standard pack for exporting their Apples, I understand Shepparton intend following on similar lines for the coming fruit season, and will adopt a standard pack for their Peaches and Apricots. This also will be the first packing school of its kind in Victoria for soft fruits. Buyers of soft fruits should welcome this, as the packs will be standardised and the number of fruits contained in each case will be easily ascertained.

"Fruit districts and central packing sheds desirous of commencing packing classes or demonstrations should make application to the Department of Agriculture, Melbourne, when all arrangements will be made free of charge."

A copy of Mr. Krone's bulletin on standardised packing for export is to hand, and in addition to other useful information it contains a simple form of ready reckoner for packing Apples. This contains the name of pack, description of layer, number of layers to case, total number of various sized Apples to the case, etc. A copy of this bulletin is available free on application to the Department of Agriculture. Similar tables and ready reckoners have been drawn up for Oranges, Lemons, Mandarins, soft fruit and Pears, and will be published in bulletin form shortly.

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Fruit Merchants
Established 1882.

A Trial Consignment solicited from Growers in all States.

Prompt Settlement.

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Melbourne

VICTORIAN FRESH FRUIT EXPORTS.

A statement has been issued by the Victorian Department of Agriculture showing quantities of fresh fruits exported overseas and where examined.

The total exports from Victoria was 373,095 cases. Of this quantity 109,729 cases were examined at country stations made up as follows: apples and pears, Harcourt, 70,340; Narre Warren, 15,893; Pakenham, 22,369; Doncaster, 1,760. The balance, comprising 263,366 cases, was examined at Melbourne. Shipments overseas were made from February 1st to May 11th, 1922.

SUBSCRIBERS' PAYMENTS RECEIVED.

The following are the subscriptions received from August 20th to September 20th, 1922. The month quoted in parenthesis indicates to what date the subscription is paid. These are in addition to the subscribers that have paid to our local agents and to our offices in the various States:—

H. R. Alexander (July, '23), E. C. W. Allen (June, '23), G. J. Apted (Jan., '23), W. Atkins (Aug., '22), W. E. Barrett (June, '23), P. Beecroft & Co. (July, '23), S. Beavis (Aug., '23), E. Bennetto (Aug., '22), E. M. Boulton (Sep., '22), S. Bird (Sep., '22), H. K. Brooke (July, '23), Burnside & Co. (June, '23), G. Brown (Sep., '22), S. P. Calder (Sep., '23), H. T. Castles (Sep., '23), J. J. Charlton (July, '23), W. T. Charley (Aug., '23), W. J. C. Collins (July, '23), A. W. Cornish (Aug., '23), J. M. Cowley (Feb., '23), Director of Publications, Westminster (Dec., '22), J. Donaldson (Aug., '23), A. C. Douglas (June, '23), T. Dowsley (Aug., '22), J. E. Drage (Jan., '23), W. Dunkerley (June, '23), F. Ellwood (Feb., '23), G. Fankhauser (Mar., '24), C. R. Fardell (July, '23), G. Fountain (Feb., '23), H. F. Gibb (Aug., '23), John L. Glasson (Aug., '23), Yanco Exp. Farm (Aug., '23), W. and C. Gowie (Dec., '22), R. Gregson (Sep., '23), Griffith Prod. Co-op. Co. Ltd. (Aug., '23), H. A. Hanna (Aug., '23), T. Harrap (Sep., '22), G. De La Haye (Aug., '23), F. Height (Aug., '23), J. Hooton (Aug., '23), W. P. Hutchinson (Aug., '23), F. J. Jamieson (Sep., '23), H. Jones & Co. (S.A.) Ltd. (July, '23), T. E. Jones (Aug., '23), A. N. Jones (May, '23), Joel & Son (May, '23), P. V. Kerr (Aug., '23), C. P. Kinane (June, '23), W. Kilgour (July, '23), C. E. Krensler (May, '24). J. W. Krauty (July, '23), E. I. Lawford (Aug., '23), A. Lauer (Aug., '23), R. Low (July '23), C. H. Martell (Apl., '23), W. J. May (July, '23), Milburn Bros. (Sep., '23), Moore Bros. (July, '23), K. Moore (Aug., '23), A. E. Morgan (Aug., '22), G. Mount & Sons Ltd. (Aug., '22), F. and R. Myatt (Jan., '23), L. R. McGregor (Aug., '23), F. J. McNamara (Jan., '23), L. S. Payne (July, '23), Pearse & Lee (Feb., '23), C. Penton (Aug., '23), Mrs. A. L. Pitts (Sep., '23), F. T. Pullar (Aug., '23), H. Randall (July, '23), H. Renk (Aug., '23), H. J. Rix (July, '23), G. Richards (July, '23), Robinson & Son (July, '23), T. B. Robson (June, '23), Roberts & Co. Ltd. (June, '23), Robinson Bros. (Sep., '23), A. F. Robinson (Apl., '23), J. Sagar (July, '23), San Remo Orch. Co. Pty. Ltd. (July, '23), W. Salisbury (July, '23), Settlers' Club (May, '23), W. Slatter (June, '23), A. D. Smith (Sep., '22), R. A. Smyth (Aug., '23), S. S. Strutt (June, '23), E. A. Thorne (Jan., '23), R. Toogood (Sep., '23), F. L. Vines (Aug., '23), C. Vincent (Feb., '23), A. G. Wallace & Co. (Apl., '23), J. F. Wearne (Aug., '23), W. F. Westmore (July, '23), L. J. N. Western (Dec., '22), G. W. Wickens (July, '23), R. Wilkinson (Jan., '23), C. E. Wood (Aug., '24), J. T. Wynne (Aug., '22), A. Yates & Co. Ltd. (July, '23).

SOIL TREATMENT AND MANURES FOR FRUIT TREES AND VINES.

It is not yet too late to apply readily available fertilisers such as superphosphate, sulphate of ammonia, or nitrate of soda to fruit trees and vines. Before manuring, however, the grower would be wise to endeavour to ascertain whether the treatment of soil has been of such a character as to enable the plant to utilise the plant food already existing in the soil. Instances are frequently met with by the South Australian Horticultural Branch of the Department of Agriculture, where trees and vines have been planted in very shallowly prepared soil, with the result that the roots are unable to penetrate sufficiently to enable them to make much progress. In cases such as this, it is very obvious that the first operation necessary is to endeavour to ameliorate the soil condition from the mechanical standpoint, because the application of fertilisers to trees or vines suffering from inability to penetrate the subsoil will be largely a waste of money, and result in disappointment.

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It possesses just the advantages that you look for. The equipment is highly efficient, and the strength, balance, and ease of operation leave nothing to be desired. The broad wheels ensure easy pulling over soft soil and the patented Balancing Design lightens work for the horses. When you think of the loss caused by orchard pests and the time and labour spent in combating them you will realise that a Spray Plant like this fills a long-felt need.

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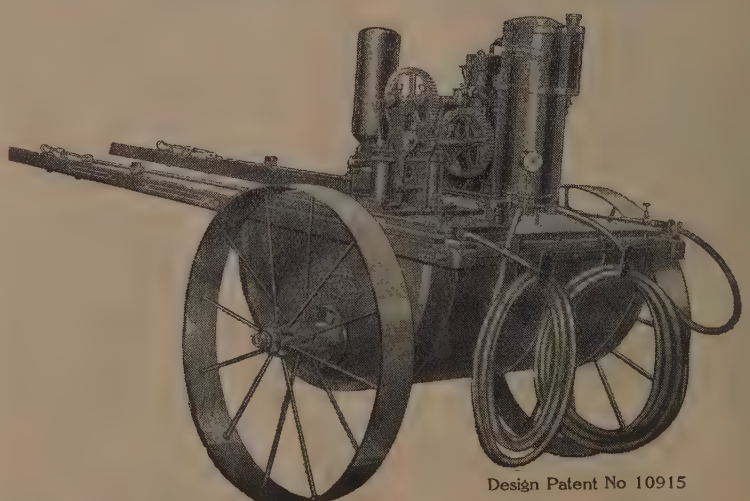

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All Consignments sold under the personal supervision of Principals by our expert salesmen. We have our regular circle of buyers and can SECURE HIGHEST PRICES: *Prompt returns a feature in our business.*

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T.S.S.	*"HOBSON'S BAY,"*	13,850	„	„	R. M. Heddle	*6th Sept. 1922*
„	*"ESPERANCE BAY"*	13,850	„	„	R. MacKenzie	*4th Oct.* „
„	*"MORETON BAY"*	13,850	„	„	J. Mason	*1st Nov.* „
„	*"LARGS BAY"*	13,850	„	„	J. Beighton	*29th Nov.* „

Each Vessel's Insulated Holds are fitted in the most modern and approved manner, and has space available for large quantities of Refrigerated Cargo. Two experimental Chambers provided in each vessel for the carriage of Soft Fruits and other Produce.

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Summer approaches.

This means an increase in vermin. They consist mainly of fleas, lice, mites, and in some districts, ticks.

Fleas are usually found in the houses and nests and rarely on the birds.

Red mites live in crevices of houses and roosts, coming out at night to feed on the birds.

Lice live on the birds, irritating them and sapping vitality. They diminish the egg yield and are the cause, direct and indirect, of more deaths among chickens than any other disease.

Prevention is better than cure.

Provide dust baths, dry in winter and moist in summer, spray the perches regularly and also the walls with some carbolic mixture.

See that all nests and roosts are made moveable. Don't overcrowd.

Dust the birds and nests occasionally with insect powder. This is best done by holding the fowl by the legs, head downwards. The feathers will then fa'l apart and the under portion of the wings be made accessible. If the feathers are lightly sprayed with water it will damp the roots of the feathers causing them to retain the powder longer.

All poultry houses should be systematically treated with a hot lime wash and carbolic two or three times yearly. A good mixture is as follows:—

Boil half a pound of soft soap in three quarts of water and while still boiling hot, agitate with it a quart of the crude carbolic acid. Keep this corked and labelled "Poison" and when a wash is wanted mix a pint with a bucket of water and syringe with it freely.

In tick infested districts a graver problem presents itself. The tick is a large insects in comparison which half buries its head in the victim's skin and sucks its blood, both the pain and loss of vital fluid often causing chickens to pine away. Ticks do not swarm like lice, but are to be found solely on the head, throat and top of the neck and must be looked for singly and with great care.

A good treatment is the application of a dressing of one ounce mercuial ointment, two ounces lanoline and half an ounce paraffin oil. This should be applied scantily but throughly to the skin over the head, with a touch under the throat. As mercury is a poison it should be diluted according to the above measure exactly.

Another treatment is a wash consisting of three parts boiling water into which is stirred one part paraffin oil, applying throughly with a rag but not drenching the plumage.

SEASONABLE HINTS.

Keep your chickens growing.

A change of yards is often beneficial to growing stock.

Finally chopped green stuff is essential for chickens.

A small proportion of finely chopped meat or meat meal should be included in the ration a couple of times a week.

See that plenty of shade is provided for your runs.

Cool, fresh water should always be available to the birds. In hot weather it is desirable to change it twice daily.

Canary seed is not a good chicken diet. It contains to much fibrous husk.

A dry mush chicken mixture may contain wheat meal and bran with a small percentage of hard grit and charcoal. It should be fed in hoppers.

After the first few weeks the chicks relish a crushed grain mixture of cracked wheat and a little rolled oats.

If your chickens appear healthy but go in the legs, use a teaspoonful of tincture of iron in the water. Such leg weakness in chicks is usually a sign of rapid growth.

It is a good plan to scatter a little dry feed overnight so that the chicks will get early morning exercise.

Do not keep chicks under boxes on the bare ground. The heat of their bodies will draw up the dampness at night and trouble will ensue.

Beekeeping.

The following notes upon the subject of Bee-keeping have been selected from pamphlets issued by the Victorian Department of Agriculture and penned by Mr. F. R. Beuhne, Government Apiculturist.

Profits of Bee-Keeping.

One of the first questions asked by people becoming interested in bee culture is—How much honey will each hive produce in a season? This question is a very difficult one to answer, as the return per hive depends upon three main factors. The first is the flora and climate of the locality where the bees are kept. The second, the ability and experience of the bee-keeper, and third, the race or strain of bees kept. A return of 20s. per hive per annum for a number of years may be considered a fair general average. For different apiaries, the return may vary all the way from nothing up to 80s. per hive, according to the character of the season, the flora of the locality and the skill of the bee-keeper. Taking 20s. as a fair general average per hive, it must not be assumed that the annual income can be increased indefinitely by increasing the number of hives. The number of hives kept is limited to what the owner can personally supervise, and what the locality will carry without overstocking it, and thereby reducing the yield. A skilled and experienced apiarist can manage 200 colonies without assistance if located in one or two apiaries not too far apart.

TRANSFERRING BEES.

Owners of bees in box hives who wish to adopt the more profitable frame hive, or upon whom it has become obligatory to do so, can transfer their bees to frames by whichever one of the three methods described below best suits their circumstances. It may here be pointed out that the adoption of frame hives does not necessarily involve the purchase of expensive hives, honey extractor, and other appliances. Bees may be kept in home-made frame hives, and the honey taken by cutting out of the frames those combs which contain no brood and returning the frames to the hives to be refilled with comb by the bees. A strip of comb 1 inch wide should be left along the top bar of the frame; if this is cut to a V edge, very little honey will be left in the frame, and the necessity for putting a fresh strip of comb foundation into the frame is avoided, while yet straight comb building is insured.

Under the Bees Act 1915, the Governor in Council may proclaim districts in which bees may not be kept in other than prescribed hives. By a regulation under the Act, "Prescribed Hive" shall mean any hive, the combs of which are in frames and capable of easy removal for the purpose of inspection. In a further proclamation certain districts are enumerated in which the transferring of all box hive bees to prescribed hives becomes obligatory.

In order to effect the change with as little inconvenience as possible, hives with frames having starters (narrow strips) or full sheets of comb foundation fastened to the centre line of the top bars, should be in readiness so that all swarms which may issue may be hived in such.

Transferring at Swarming Time.

When a swarm has settled (or clustered), it should be hived in an ordinary empty box, and, as soon as the bees are in, carried to the spot which the frame hive is to occupy.

Towards evening, when the bees are not likely to rise in the air again, the frame hive is placed in position, a bag or cloth spread out in front of the hive entrance in such a way as to provide an easy passageway into the hive, and the swarm shaken or dumped out of the box on to the cloth. If the bees are slow in entering the frame hive or a considerable number remain outside, they may be gently driven in by blowing a little smoke on them; none however should be blown into the hive.

What to do with the box hive from which the swarm came will depend upon whether an increase in the number of hives is desired or not. If no increase is wanted, the bees remaining in the old box may, after turning it open side upwards, be drummed up into an empty box placed on top (as in robbing box hives), and the bees thrown down in front of the frame hive containing the swarm.

The contents of the box hive may now be disposed of in the way usual with box hives. The combs will contain a considerable amount of brood (much more than when box hives are robbed at the usual time), and the many thousands of young bees, which would in the ordinary course have hatched within the following three weeks, may be saved if, instead of drumming the remaining bees off at once, this operation is deferred for twenty-two days, to allow all worker brood to hatch out. By this time there will be a young fertile queen, and the bees, after being drummed off, are hived on frames in the same way as the swarm, if increase is desired, or, if not, the old queen which went with the swarm may be removed from the frame hive and the driven bees with the young queen united with the bees of the frame hive by running them in towards evening after blowing a puff of smoke into the hive.

When re-uniting as described, is intended, it is best to hive the swarm, in the first instance, on the spot occupied by the box hive from whence it came and place the old box alongside, with the entrance facing in a different direction from that of the frame hive. This will serve two purposes—first, the old bees which remained in the box after the swarm left it, when returning from their foraging flights, will go to the spot they are used to and join the swarm, with the result that no after swarm will come from the box hive; secondly, there will be no bees flying back after uniting, as would be the case if the new and the old hive were some distance apart.

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Transferring at Robbing Time.

All hives do not swarm every year, and there may be a number still left in the box hives when the swarming season is over. These may be transferred at the time usually selected for robbing by box hive bee-keepers. At this time, which varies in different localities and seasons, there is generally a maximum of honey and a minimum of brood, so that the saving of it is of no great consequence, and the transfer is best effected by robbing the boxes in the usual way, but putting the bees into frame hives instead of empty boxes. If any of the stocks are too small, two may be put together into one frame hive. As far as possible adjoining boxes should be united, otherwise the bees which had their hive taken away altogether will enter the hive nearest their old location. Hives which did not swarm during the season, and particularly those which are weak in bees, may be suspected of disease. The box should be raised on one side and a piece of brood comb broken out, the box lowered again, the comb taken indoors and carefully examined for foul brood. This is done by removing the caps of some of the brood cells, especially those which look darker than the surrounding ones, and any that have sunken instead of raised caps. This pricking open of the cells should be done with a toothpick, a wooden match, or straw. Healthy larvæ are of pearly whiteness and plump; diseased ones are yellowish, grey or brown, and flabby in appearance, and, later, collapse into a shapeless brown mass, which, when touched with a match, draws out stringy or ropy. This disease is often, but not always, accompanied by an odour of stale glue.

Any colony found diseased and with not sufficient bees left to form a medium swarm should be at once destroyed by burning the box, bees, combs, and all. The bees should be shut in when they have stopped flying for the day and the whole hive burned on a fire in a hole dug for the purpose, which is to be filled up with earth when everything is consumed.

If a diseased hive still contains sufficient bees to form a swarm, they may be drummed off into an empty box, in which they should be left for three or four days to cleanse themselves. The bees are then transferred to a frame hive like an ordinary swarm. The old box and contents should be burned as soon as the bees are driven out, and the intermediate hive cleaned by immersion in boiling water.

Robbing box hives for the purpose of transferring bees to frames should not be done too late in the season, so as to give them a better chance to establish themselves before winter.

On no account should honey or comb, wax, or refuse from the box hives be given to the bees, nor should they be allowed to have access to it. The cutting out of combs, the straining of honey and the rendering of wax should all be done indoors, secure from bees, or when that is not possible, it should be done at times when bees are not flying and all honey, wax scraps, or daubed utensils should be removed, or carefully and securely covered up, when work is finished.

It may here be pointed out that the practice of many box hive bee-keepers of leaving comb too dark for the straining bag lying about, straining honey out of doors, or even purposely putting scraps of comb and sticky refuse out for the bees to clean up has, since foul-brood has been introduced to Australia, caused the loss of thousands of colonies of bees and the wholesale dissemination of that disease. Even the bees' nests in trees first became infected in this way. The subsequent felling and robbing of bee trees by bee hunters, who left the refuse exposed to other wild bees, box hive and frame hive bees, caused a still wider distribution of foul-brood.

It is not natural for bees to find honey. They gather nectar from the blossoms; this they transform into honey inside the hive. When they find honey outside they become excited; when the supply is exhausted they forage round for more; they find weak, usually diseased colonies, or bee trees, somewhere within their range of flight; they atack these and carry home their stores of honey, and with them the germs of foul-brood.

If feeding bees is necessary, as it may be in the case of late transfers, sugar syrup (2 sugar to 1 boiling water by weight) should be given in a feeder inside the hive, not honey outside. Sugar syrup does not excite bees so much as does honey, and can be relied upon as being free from disease.

Transferring Bees and Combs.

Anyone who understands bees well, and has sufficient experience in disease to enable him to detect the very first trace of it, can transfer box hive bees to frames at any time during the active

(*Continued on page 370*)

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Seasonable Orchard Notes.

On constant and continual cultivation will now depend, to a large extent, the successful production of fruit crops in the coming season. All ploughing should have been finished by this month, and where green crops have been ploughed in or where there are weeds the disc-cultivator will be found very useful in chopping up the vegetation. Orchardists who have not a disc-cultivator will be at a great disadvantage, as tine-cultivators clog and bring the vegetation to the surface. As the disc-cultivator produces a very fine surface, it will be advisable to recultivate with the tine machine when the weeds or green crop have become thoroughly decomposed, a rough mulch, suitable for absorbing and retaining moisture, being thus produced.

Spraying for Insect Pests.

In many districts trees will this month receive their first spraying for codlin moth. It is thought by some that it is only necessary to spray the fruit, on the ground that the moth only deposits its eggs on the fruit or specially in the calyx. This is not altogether correct, as many of the eggs are deposited on the leaves and foliage, so that the trees should receive a thorough spraying, and every part be covered with the solution.

Where woolly aphis is present, a dual-purpose spraying may be given by combining arsenate of lead and nicotine washes. A concentrated nicotine extract, such as black leaf 40, has proved efficacious.

Green Aphis of Peaches.—Trees should have received an early spraying with nicotine washes for the checking of this pest, and also of black aphis. This treatment should now be followed by further applications of nicotine sprays, applied under a pressure of 150 lb. to 200 lb. to the square inch.

In all districts trees should be carefully examined for the Pear and Cherry slug, and as soon as any sign of it is detected they should be thoroughly sprayed with arsenate of lead at the strength recommended for codlin moth. The slug is rather more serious than growers sometimes think; it has been observed that where it has been very prevalent on Cherries in one year it had such an ill effect upon the trees that they bore little or no crop the following year.

The Peach tip moth is a very difficult pest to deal with, as the work of the larvæ of this moth is confined in its initial stage to internal attacks on the wood fibre, so that external sprays are not efficacious. The only way to deal with this pest is by individual and united care. Peach trees should be carefully inspected, and if at any time the young growth shows signs of wilting it should be immediately removed and destroyed. By this method (although tedious and costly) much of the young larvæ will be destroyed.

The red spider is readily kept in check where trees have been sprayed with lime-sulphur solution in the early spring, before the buds have burst.

Spraying for Fungus Diseases of Fruit Trees.

The first spraying for black spot of Apples and Pear should have been completed ere this, and it may now be followed up either by lime-sulphur or Bordeaux mixture.

Powdery mildew of Apples is getting a strong hold in some districts where the trees have not received proper attention. All diseased parts should have been removed at pruning time, but even with extreme care small parts will have been missed, and from now on the trees will require great care and attention, and should be sprayed with atomic sulphur.

In most cases where Peach leaf-curl is present, it may be traced either to neglect to give winter sprayings of lime sulphur or to faulty application. If the disease appears to be bad, a summer application of lime-sulphur may be made, but, as previously pointed out, this is risky in some cases, as certain varieties of Peaches drop a proportion of their leaves if sprayed when in leaf with lime sulphur.

Shot-hole fungus of Apricot and Almond should have been checked with the winter application of Bordeaux mixture, but it may appear later in the season, and if so the trees should be sprayed with Bordeaux mixture at summer strength.

Pruning of Citrus.

Citrus pruning should be finished this month. With older trees, inside growth, dead and green, should be removed, and all low-lying wood removed to a height of about 9 inches from the ground, to facilitate spraying and ensure better results when fumigating, as low growth is often partly covered with earth and scale and sheltered from the fumes.

The clearing away of this low growth also allows one to detect any exudations of gum on the main stem above and about the union.

Where gum is detected one should examine the tree to see if collar-rot is present. The presence of gum on the stem or trunk is a reliable indication, as a rule, that the tree is affected, and it is wise in such cases to cut away the bark until white, healthy tissue shows, leaving no trace of yellow bark. Apply Bordeaux paste made as follows:—1½ oz. bluestone, 1 oz. fresh lime, 1 pint of water.

Of Great Value.—"The Australasian Fruitgrowers' Annual and Trade Record." Articles on Pollination, Manuring, Spraying, Pruning, Marketing, Cold Storage, Seed Growing, Irrigation, Planting Trees and Vines, Dehydration, Viticulture, the Citrus Industry, the Jam and Canning Industry. Complete statistics of acreages and production; complete Spraying Calendar, Complete Book-keeping System and Income Tax Guide.—9 Queen Street, Melbourne; 5/9 posted (in Victoria); 6/2 posted (Interstate and New Zealand).

General Rules for Spraying for Downy Mildew in Normal Seasons.

In the majority of seasons the following treatment will protect the crop, and is recommended by Mr. F. De Castella, Victorian Government Viticulturist, and C. C. Brittlebank, Plant Pathologist:—

First or Preliminary Spray.—When the young bunches are at their maximum visibility (late September to early October, according to district and season).

Second or Main Spray.—In the second half of October. If the preliminary spray was omitted, this *must* be completed before 20th October; otherwise it may be delayed somewhat—especially if the weather keeps fine and the vineyard is not irrigated. Spraying can, with advantage, be suspended whilst the vines are in full blossom. Though Bordeaux does no harm to the flower, spraying may adversely affect setting, just as a shower would. The damage (if any) is insignificant compared with that Mildew may cause: if an invasion is imminent do not hesitate to spray because the vines are in flower.

Third or Final Spray.—In January, to protect the foliage, thus permitting the fruit to ripen and the vine to store reserves for next season. Premature leaf fall, caused by Mildew results in poor quality Grapes, and wine and a reduced yield the following year.

Additional Spraying Necessary in a Wet Season.—We grow the same vines as in France, and have the same fungus to deal with; given the same weather conditions the same protective treatment will be needed as in France. French vineyards are sometimes sprayed 10 to 15 times in a season!

Irrigation Enhances the Need for Spraying.—Under irrigation Mildew may appear in seasons when it does not show itself in vineyards which are not watered. Irrigation in October and later, supplies the water needed for oospore germination, and at the right temperature. In irrigated vineyards it should be a fixed rule to always *SPRAY IMMEDIATELY BEFORE WATERING*, except, of course, in the case of a winter irrigation.

Spray Mixture Required Per Acre.—This depends on the size of the vines. Wine vineyards need less than Sultanas, etc., under irrigation. In a general way the preliminary spray will need 30 to 50 gallons and later sprays 60 to 80 gallons per acre.

Commenting on the spray material to be used, Mr. De Castella states as follows:—

Copper soda is a good fungicide, just as deadly to the Mildew fungus, in fact, as Bordeaux mixture. The latter is much to be preferred, however, as its protective action lasts so much longer—especially if alkaline and used with casein.

Copper soda burns the foliage, if alkaline, owing to the presence of copper carbonate; unless it be alkaline casein must not be added to it.

Directions for making Bordeaux Mixture.

French Method.

The following is simpler than the Galloway (American) method. Provided stirring be very thorough at each addition of lime, and after final dilution, an equally good spray will result. *Only fresh lime of first class quality should be used.* Old lime results in a "Bordeaux" which scalds the foliage.

Materials.

Copper sulphate, 10 lbs.
Fresh quicklime, 5 lbs. (about).
Water, 50 gallons.

If the lime is of poor quality or air slaked, more than 5 lbs. will be required; if pure and fresh, less will suffice.

Utensils.

A 60 gallon hogshead with one head removed; pegs should be inserted inside to show the 10 and 50 gallon levels.

Two or three kerosene tins for boiling water in. A tub or tin to slake the lime —capacity about 10 gallons.

A dipper—enamelled or painted inside and out. Some phenolphthalein testing paper. This can be obtained from any chemist. It consists of strips of white filter paper wetted with a 5 per cent. solution of phenolphthalein in methylated spirit, and allowed to dry.

A stirring device, such as a stout broom handle to which is fixed a small piece of board.

Operations.

Dissolve the copper sulphate in 5 gallons or so of hot water; make up to 10 gallons with cold water. A stock solution of copper sulphate (one pound to one gallon of water) may be made up. This will keep indefinitely. Ten gallons of this stock solution should be taken for each cask of mixture.

Add about 20 gallons of water to the copper sulphate solution in the cask (this need not be measured).

Slake the quicklime by adding small quantities of water at a time. When slaked add water sufficient to make about 6 or 8 gallons of milk of lime.

Pour this lime milk through the sieve into the bulk copper sulphate solution with brisk stirring until neutralised. Neutralisation is shown by the phenolphthalein paper turning pink. Stop adding lime milk as soon as the test paper turns slightly pink. (The test paper can with advantage be pinned to a small stick to avoid touching with fingers wetted with lime water, which would result in misleading indications).

Stir thoroughly. The more thorough the stirring the better the mixture.

Make up to 50 gallons with water, and stir again.

The mixture is now ready for use. It should be used fresh, only sufficient for the day's requirements being made at one time.

Copper sulphate solution must not be handled in iron or tin vessels, unless these have been very thoroughly painted or tarred, both inside and out; wood or enamel vessels are to be preferred.

High-grade quicklime is now obtainable packed in air-tight tins. With this, weighing may be resorted to—2½ lbs. will completely neutralise the 10 lbs. copper sulphate required for 50 gallons of spray mixture.

Bordeaux with Casein.—The "wetting" or spreading power of the mixture can with advantage be thus increased. Five ounces casein will suffice for 50 gallons of spray, which must be sufficiently alkaline to redden phenolphthalein paper. If this does not occur, add more lime. Five ounces casein mixed (dry) with 3 or 4 handfulls of slaked lime is well stirred into ½ gallon of water. When the casein is dissolved stir into 50 gallons of Bordeaux (or copper soda).

The casein may also be dissolved in a pint of 10 per cent. carbonate of soda solution (2 ozs. washing soda to a pint of water) or in a pint of liquid ammonia. It is well to prepare the casein solution overnight.

A convenient stock solution can be made of 5 oz. casein, ½ oz. caustic soda, and 2 quarts water. Dissolve the caustic soda in the water and add the casein.

Royal Agricultural Show.

Record Show at Melbourne.

The Royal Agricultural Show, which is being held as we go to press, opened in bad weather; despite this, the attendance and interest was maintained throughout.

A record number of entries were recorded.

There was a splendid display of competitive exhibits in the fruit section in the agricultural hall. The first prize for the collection of apples and pears was secured by the Ringwood Horticultural Society with a good display. Other successful exhibitors in the apple section were Messrs. A. B. Herbert, W. G. Whicker, J. Tainton, A. E. Collins, W. Muir, J. Cowan, and G. E. Mock.

In pears, Mr. A. E. Thiele was the most successful exhibitor; the following also secured prizes: J. Tainton, G. Mock, J. Cowan, and A. B. Herbert. Citrus: Oranges, E. G. Wood, 1st; Riverside Citrus Co-op., J. Noske, E. G. Selleck, H. Stubbe.

In dried fruits other than currants, sultanas, and lexias, Ardmona Fruit Products Co. Ltd. secured first prize with some fine samples of dehydrated peaches, pears, prunes, nectarines, apricots, and Waltham cross grapes,

The agricultural department had a splendid display of fruit and other products non-competitive.

The machinery and other exhibits attracted much attention and a number of new lines of interest to orchardists were staged. These will be dealt with more fully in our next edition.

Fredk. Coker, Brookfield Orchard, Meance Post Office, Hawkes Bay, N.Z., under date 3/8/22, writes:—"I should like to thank you for the much valuable information I have received through your edition. I can assure you it has been the means of putting many pounds in my pocket (advice which has lessened the cost of production, etc.). Wishing your paper all future prosperity."

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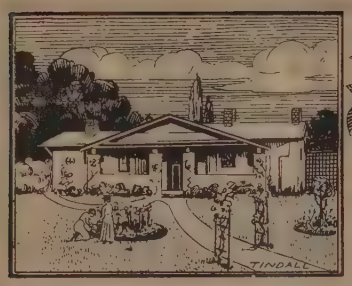

BEAUTIFYING THE ORCHARD HOMESTEAD

Some Daffodil Notes.

THE season of the *Daffodil* is here. They are all out, throwing their dainty creams, yellows and whites everywhere. And now that hybridists are working harder than ever to give us the long-sought-for red Daffodil, the red cups are more and more prevalent each year. With new varieties coming forward every season, it is interesting to note that some of the older varieties are just as good as ever.

I have just been favoured by a visit to the Daffodil garden of the veteran grower, Mr. James Lang, of Harcourt (Vic.). There the old variety of Sir Watkin was just as fine and free growing as any other. There was a row of lovely flowers refined and hard to beat. Some of the stems were over twenty inches high, with a perianth four and a half inches across. This is a grand flower when well grown. Other old varieties, Emperor, Empress, Mr. Walter T. Ware, and so on, are all good, and flower as freely as ever.

In Mr. Lang's garden there were some lovely flowers of the big trumpets, Sir Francis Drake and Emblem, on stems twenty-nine inches high, with cups over two inches long and four and a half inch wide perianths. The latter is a local seedling, having been raised by Mr. D. V. West at Casterton.

Victoria is well to the front in Daffodil seedling raising; and some locally-raised seedlings are unequalled. Mr. Alister Clark's pure white Leedsii, Nightlight is the purest white Daffodil we have. It is a great flower. So is the Jonquil hybrid, Gertrude Nethercote, raised by Mr. C. A. Nethercote, of Hawthorn. Mr. Lang had a fine four and a half inch flower on a twenty inch stem, rich, and of the purest gold colour. Everybody agrees that this is the finest Jonquil hybrid yet in cultivation. The English Jonquil hybrid, Buttercup, is a very fine flower, and a grand one for cutting.

The Daffodil is one of the good flowers for orchard garden beautification. It is gay in spring; it needs but little attention, and the summer waterings that are of necessity given to many other flowers are not needed for the Daffodil. If Daffodils are grown in clumps, and lifted for transplanting every two or three years, they bloom very effectively and freely.

As soon as the flowering season is over, the plants may be topdressed with old manure, and encouraged to make an abundance of foliage growth. This helps to make good plump bulbs, which will flower well next season. On no account should any of the foliage be cut away, it should be allowed to die naturally towards the end of the year.

A New Flowering Shrub.

This is called Sesbania Trifetti. It comes from Brazil, and seeds are available now in several States. Last year I saw a couple of flower sprays of this shrub, and they were really gorgeous. The foliage was very dainty, after the appearance of that of Sutherlandia, of Sophora, or of Clianthus, the New Zealand glory pea. It is light green in colour. It is a quick growing shrub, and the one noted is now about eight feet in height, having been grown from seed in less than eighteen months. The flower clusters are borne in the leaf axils, they are like the flowers of Swainsona Galegifolia in shape and size; there are about eight in a spray, and the colour is a glowing scarlet. It is a striking shrub, very brilliant, and if it grows as well in other parts as it does at present in the Melbourne garden, then it will be a decided acquisition to our list of garden shrubs.

Summer Annuals.

There are signs of a moist spring in many parts. If that be fulfilled then we should have a really good stock of these plants for summer and autumn blooming. Such annuals as phlox, portulacca, asters, and zinnias give gay and gorgeous patches for a long time. The seed of these, and others, including miniature sunflowers, balsam, and marigolds, may now be sown. Get the seedlings transplanted early, and good plants will be the result. And if a good golden patch is need in a sunny open spot the little zinnia linearis is just the thing.

Garden Pests.

Just now rose aphis will be a troublesome pests among the new growths of the roses. It is an insidious little trouble, and, being very small, does so much damage before it is very apparent. It is so easily got rid of, if taken in time, and before it has had an opportunity to increase. The affected bushes should be sprayed with some nicotine preparation, and a second spray given a few days later will in most cases finally clean the bushes.

Recently I heard of a gardener who sprayed his aphis-infected bushes with a strong lime-sulphur spray. Every leaf was burned, and the weak shoots as well. This illustrates the danger of using a caustic spray on a young weak and growing foliage.

Slugs and snails are very prevalent this season. There are so many so-called remedies. Lime, arsenate of lead spray, and strong nicotine are among the best of these.

With the advent of warm spring weather, rose mildew is almost sure to come. The young shoots, stems, and foliage alike assume a mildewy appearance, quickly becoming burned. There is no better common remedy than sulphur dust, sprinkled on the moist bushes and on the ground as well.

Quite a number of caterpillars are making their appearance, small and large, woolly and smooth, green and brown, will be found feeding on all kinds of garden plants. A fairly weak solution of arsenate of lead sprayed on the plants attacked will soon kill all the caterpillars.

Unless the flowering peaches are pruned at once it is almost certain that leaf curl will come along. This will result in dead twigs and a reduced crop of blossoms next year. All of the laterals and side growths should be cut off, leaving the main strong growths quite bare. By the time the leaves come on the new shoots the season is too far advanced for the development of leaf curl, and the trees are saved from the fungus attack.

Wild Flowers.

Wild flowers are now blooming everywhere. I wonder whether we realise what a wealth of glory we have in our Australian wildflowers. Now is the time to get out into the bush, the moors and the hills, and note the desirable species for garden cultivation.

It is almost certain that in very many cases quite young plants will be found growing among and under the older bushes of the same species. With a little care these may be lifted with a fair ball of soil, wrapped in paper, and transferred to the garden. Watering in, shading with a few leafy twigs from sun and wind, especially the lat-

ter, for a week or two are all the cares that are necessary. If the roots have not been injured the plants will thrive in their new location.

Do not worry them with plant food for the first season; let them establish themselves, and then, when established, top dressings, leaf mould, small supplies of old rotted manure, or bonedust may be considered to help them along.

GOVERNMENT EXPORT DEPARTMENT.

Complaints in South Australia.

Growers and shippers in South Australia are complaining in regard to the rough handling of fruit at the Government Export Department, and also the high costs.

The Government Cool Stores are adjacent to the shipping point for oversea vessels. The Produce Department is organised to receive the fruit and load it into the ship's chambers, or to store or place them in cool store, also to make out the bills of lading, insurance documents, etc., the fruit being consigned in bulk to the South Australian Trade Commissioner in London, who in turn passes the fruit on for sale through the recognised channels of trade.

Experienced growers state that this method is too costly, and further that the handling of the fruit from the cool store to the ship's side is unsatisfactory. The South Australian Chamber of Commerce is investigating the complaint that the Government Produce Department in seeking monopoly of the fruit export trade is threatening strangulation of private enterprise in this connection. Information received by the Chamber is to the effect that officers of the Department travelling per motor car and other conveyance canvass the fruitgrowers in the various districts, soliciting consignments of fruit from them to be shipped through the Government Produce Department.

The charges are 9½d. per case for receiving and cold storing for 14 days, or portion thereof, and attending to shipment (inclusive of wharfage). This charge is made alike to merchants, exporters, and fruitgrowers, except that, if a merchant's fruit is in the Government store for a period exceeding 14 days, a further charge is made. Yet if growers, who ship through the Government Produce Department, slightly exceed the 14 days, no extra charge is made. The Government pays freight on account of growers, and advances 75 per cent. of the value free of interest to growers. The arranging for this finance, attention to advices to London, the cabling of advices from London, are done free of cost to the grower, although it is obvious that the staff must be maintained both in South Australia and in London to attend to this.

Despite the attention to these services, the Government agency does not sell the fruit in London. The consignments are placed out amongst the fruit selling agents, and the charge of 5 per cent. is made as usual, plus the usual charge of 1/- per case for wharfage and other expenses.

The South Australian Chamber of Commerce understands that merchants object to having their business taken from them by the Government Department, at the same time being taxed to make up for the Department's annual losses. It is stated that the losses in 1919-20 were over £30,000.

Growers state that the service is inefficient and costly. The charge of 9½d. in South Australia compares unfavorably with the charge of 3d. per case in Victoria. Advices to hand from London state that the present system of dealing with South Australian fruit is not working to the best interests of the growers.

It would appear that Government Departments can and do perform valued services to primary producers, but not in the realms of marketing and trading.

The "Fruit World" Does its Duty.

A subscriber at Applethorpe, Queensland, writes, 20-3-22:—"I find the "Fruit World" very useful to me, in fact I owe the saving of my Grape crop to information received through same. Wishing you every success."

ESTABLISHED 1866 TELEPHONE 2979

Watters' Seeds

For the CHOICEST VEGETABLES and most BEAUTIFUL FLOWERS sow our Seeds

We are Headquarters for—

Hunter River Lucerne

Cleaned by our Special Machinery, and free from all weeds
SPECIAL QUOTATIONS for Cwt. or Ton Lots, on application

We have large stocks of the following in best re-cleaned Seed: **Broadleaf Dwarf Essex Rape, Grasses, Clovers,** and all varieties of **Green Fodder and Root Crop Seeds**

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This is THE ORCHARDIST'S CO.,

for insuring his buildings, fruit in store, Workers' Compensation, and other risks. An orchardist who becomes a shareholder and places his insurances with this Company participates in the profits which his own business creates. Thousands of farmers and orchardists are already shareholders. Write for particulars.

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The Fruit Trade

Every Firm should be Officially Represented

if only by a line or two—Our Readers are Your Clients. It is an able and wise introduction, and when you go through the fruit districts our Readers will have already known you through us.
It pays best to send Consignments Regularly — Not Occasionally — to the best markets, by doing so you strike the rising and falling markets and make a fair average for the season.

A ten times wider and better distribution will ensure a ten times greater production, at more payable returns. It is large and valuable exports from settled industries that make a nation prosperous.—Ed. "F.W."

This Journal is the recognised representative of the FRUIT TRADE in the Southern Hemisphere.

REPRESENTATIVE FIRMS, FRUIT MERCHANTS, AGENTS, EXPORTERS, Advertising in this Journal.

NEW SOUTH WALES.

Sydney.
Chilton, F., City Fruit Markets.
Hopkins & Lipscombe, Fruit Exchange.
Piggott, C. G., Fruit Exchange.
Rogers, F. H. G., Fruit Exchange.
Rule & Beavis, Fruit Exchange.

VICTORIA.

Melbourne.
Coastal Farmers' Co-op. Society, Western Market.
Davis, J., Western Market.
Lister, G., Western Market.
Mills & Co., J. B., 9 Queen Street (representing Nothard, Lowe & Wills Ltd., London).
Millis, A., & Sons, Western Markets.
McClure, Valantine & Co. Pty. Ltd., 49 William St.
Mumford, J. G., 449 Flinders Lane.
Pang & Co. Ltd., H. L., Little Bourke St.
Silbert, Sharp & Davies, Western Markets.
Stott & Son, T., Western Markets.
Tong, W. S., Western Markets.
Vear, F. W., 49 William Street.
Victorian Orchardists' Co-op. Assn. Ltd., 456 Flinders Lane.
Victorian Producers' Co-op. Co. Ltd., Collins Street.
Wade & Co., H. M., 439 Flinders Lane.
Woolf, G., Western Market.

QUEENSLAND.

Brisbane.
Barr, A. S., Fruit Exchange.
Collard & Mackay, Fruit Exchange.
Cooksley & Co., Fruit Exchange.
Comino Bros., Fruit Exchange.
Finlayson & Son, Fruit Exchange.
Geeves, H. V., Fruit Exchange.
International Fruit & Produce Co., Fruit Exchange.
Robsons Ltd., Fruit Exchange.

WESTERN AUSTRALIA.

Perth.
Lantzke, F. W., Stirling Street.
Wills & Co. Ltd. G., Exporters.

SOUTH AUSTRALIA.

Adelaide.
J. Aarons, Fruit Exchange, Newmarket.
H. C. Austin, Fruit Exchange.
Mack, John & Son, Grenfell Street.
Wills & Co. Ltd., G., Exporters.

TASMANIA.

Hobart.
Jones & Co. Ltd., H., Fruit Exporters.
Peacock & Co., W. D., Fruit Exporters, and at London.

NEW ZEALAND.

Auckland.
Radley & Co. Ltd., Fruit Auctioneers.
Turner & Growers Ltd., City Markets.

Christchurch.
Ivory's Ltd.

Dunedin.
Co-operative Fruitgrowers' of Otago Ltd.
Paterson, Thos., & Co., Vogel Street.
Central Produce Mart, Moray Place.

ENGLAND.

London.
Bradley, F. C. & Sons Ltd., 35 Bow Street, Covent Garden.
Da Costa, Gerald, Covent Garden.
Freeman & Co., 98 Great Tower Street.
Fruit & Produce Exchange of Great Britain.
Jacobs, E. & Sons, Covent Garden.
Knights, Chas., Ltd., Covent Garden.
Landauer & Co., 39 Eastcheap.
Margetson & Co. Ltd., Covent Garden.
Moore & Co. Ltd., F. W., 8 Arthur Street, London Bridge.
Monro, Geo., Ltd., Covent Garden.
Nothard, Lowe & Wills Ltd., Tooley Street.
T. J. Poupart, Covent Garden.
Ridley, Houlding & Co., Covent Garden.
Swann & Co., 3 Salter's Hall Court.
Thomas Ltd., J. B., Covent Garden.

Hull.
Jefferson & Gosling.
Shaw, B. & J.
White & Son Ltd.

Liverpool.
J. Adam, Son & Co. Australian Agents: C. Piesse & Co.

British and Australasian Market Reports

GREAT BRITAIN.

Australian oranges ex *"Ascanius"* realised a gross average of 27/3 per case. Expenses are said to amount to about 17/6 per case.

London (19/8/22).

The following are the prices ruling published in the "Fruit, Flower, and Vegetable Trades' Journal," 19/8/22:

Apples, English, 2/- to 6/- per bushel; Bananas, "Hoya," 22/6 to 35/- Figs, extras, 9/- to 12/- per doz.; Grapes, English Alicante, 1/6 to 2/3 per lb.; Grape fruit, 22/6 to 25/- per box; Lemons, Messina, 300's, 14/- to 15/-; Nectarines, 3/- to 12/- per doz.; Oranges, Navels, 25/- per box; Peaches, English best, 9/- to 15/- per doz.; Pears, Williams, 4/- to 7/- half bushel; Pines, 1/6 to 5/- each; Plums, Victoria, 7/- to 12/- per half sieve.

NEW SOUTH WALES.

Sydney, (26/9/22).

Mr. F. Chilton, City Fruit Markets, Sydney, writes under date 26/9/22:—(Prices are per case except where otherwise mentioned). The demand for fruit generally is fair, with a tendency to improvement, especially for best Apples and Mandarins. Rough lines of Apples, Oranges, and Lemons are plentiful and dull of sale at low prices.

Queensland Fruits—Bananas, 14/- to 18/-; Pines, 7/- to 9/-; Tomatoes, 9/- to 15/- per half case; Passions, 13/- to 17/- per half case. N.S.W. Fruits—Bananas (Tweed River) 15/- to 25/-; Oranges, 4/- to 9/-; Navels, 8/- to 14/-; Mandarins (Emperor), 7/- to 15/-; Lemons, 2/6 to 5/-; Passions, 8/- to £1 per half case. Victorian Fruits—Pears (Josephine), 12/- to £1; Apples (Rokewood), 9/- to 13/-; Yates, 7/- to 16/-; Statesman, 8/- to 12/-. Tasmanian Fruits—Apples, S.P.M., 6/- to 15/-; S.T.P., 4/- to 9/-; Tasma, 12/- to 16/-; F.C., 5/- to 10/-; Croftons, 7/- to 15/-.

QUEENSLAND.

Brisbane (23/9/22).

Our Brisbane correspondent reports under date 23/9/22 as follows:—

The trade generally this month has been dull. Supplies from Tasmania have kept up remarkably well—the bulk of the shipments being Sturmers, but the demand for this variety is not all that can be desired. The bottom fell out of the Pear market about a week ago, due, we believe, to the fact that prices went too high to suit the public, with the result that they went right off.

Tasmanian apples, coloured, 10/- to 13/-; S.T.P., choice, 9/-; F.C., n green, 11/-. Victorian Apples, coloured, to 15/-; Pears, W.N, and Jos., 16/-; B.P. 12/-. New South Wales Mandarins, choice, scarce, 17/-; Locals, a few at 18/-.

New South Wales Oranges are arriving much too small, and cannot compete with local. Choice Queensland Oranges are worth to 10/-.

VICTORIA.

Melbourne (27/9/22).

The following are the prices ruling at the Western Market:—Apples, Jonathan, 9/- to 12/-; choice cooking, 6/- to 8/-; Bananas, 18/- to 25/-; Lemons, Victorian, 4/- to 6/-; Pines, Queens., 10/- to 12/-; Oranges, Mildura, 8/- to 10/-, Navels, 9/- to 12/-; Passion Fruit, 25/- to 35/-.

For the week ending September 22nd prices for Victorian citrus were as follows:—Navels, 10/- to 12/-; Commons, 9/- to 11/-; Mandarins, 10/- to 17/-; Lemons, 4/- to 6/-.

During Mr. Branson's absence, Mr. Esmond Russell, of 60 Queen st., Melbourne, is acting as the association's market representative.

SOUTH AUSTRALIA.

Apples, eating, 12/- to 14/- per bush. case, cooking, 10/- to 12/-; Bananas, 24/- to 26/- per crate; Lemons, 4/- per case; Oranges, 6/- to 7/-; Mandarins, 14/- to 16/-; Navels, 11/-; Poorman, 5/- to 6/-; Passion Fruit, 52/- to 54/-; Pears, eating, 10/-, cooking, 8/-; Pines, 16/-.

TASMANIA.

Hobart (23/9/22).

Apples, S.T.P., No. 1 hard, realised 4/4 to 5/6, slight spot, 4/- to 4/3, medium, 3/9 to 4/3; S.P.M., 4/- to 4/4, inferior, 1/3 to 2/3.

NEW ZEALAND.

Messrs. Turners & Growers Ltd., fruit and produce agents, write:—

In connection with the demand in Auckland for Australian fruit, the chief demand is for Mandarins, as we almost wholly depend on Australia for our supply of this fruit. We also require regular consignments of Pines, and during the winter and spring months, Passion Fruit. In addition to this line, there is always a good demand for Navel Oranges, if they can be landed in New Zealand at reasonable prices.

During the twelve months of last year our firm handled nearly 20,000 cases of Australian fruit, which must make some impression on the market, even though this quantity is small.

Messrs. Turner & Growers Ltd. further state that their premises comprise 30,000 square feet of ground floor space, and more than as much again in upper floors and cellars. They have their own cool storage on the premises, with accommodation for 30,000 cases, and a duplicate plant which can cope with considerably more if necessary.

Ship Your Oranges, Lemons, Grapes to New Zealand

All consignments for this market will have careful attention and realize highest prices if sent to

The Co-Operative Fruitgrowers of Otago Limited, Dunedin

Personal supervision of every consignment.

Cheques posted promptly.

Drop us a Line or Cable "Peachbloom," Dunedin.

Dunedin—

Thos. Paterson & Co. report under date September 8, re sale of fruit ex "Waikouaiti" and "Paloona." All citrus fruit, except Lemons have been in very keen demand. About 750 cases Mandarins, Common Oranges and Navels arrived by the "Waikouaiti," and realised as follows:—Mandarins, from 22/6 to 26/6; Common Oranges, from 21/- to 26/6; Sydney Navels (packed 75 to 90), 22/-; (90 to 120), 22/- to 27/3. Bananas realised the remarkable price of 35/- case, and were rushed at this price. Passion Fruit up to as high as 29/6.

The "Paloona" brought about 1,088 cases of mixed fruits. Bananas brought 35/- to 36/6. These were a better sample than from Sydney, and the cases were paper lined and arrived in beautiful condition. Common Oranges, 18/- to 26/9, but some were of inferior quality. Navels realised, for cases packed 60 to 90, 21/- to 22/-; 90 to 120, 22/6 to 27/-. Pineapples, packed 18 to 25, from 22/- to 25/6.

The Union S.S. Co. advise that the "Paloona" will now be making alternate trips via Bluff, sailing about the 20th of the month.

Dunedin, 18/9/22.

Reilly's Central Produce Mart Ltd., Dunedin, advising that at the moment our market offers good inducement to consignors of citrus fruits—passions, pines, etc. A shipment is due about 20th inst. We expect Adelaide lemons will realise 16/-, plain oranges 19/-, and the navels 20/-.

The "*Whangape*" is also due shortly. Provided this shipment arrives in good order her mandarins will realise about 23/-, passions about 35/-, pines from 21/- to 26/-, common oranges about 15/-, navels about 20/-, lemons about 13/-.

Bananas in Bad Condition.

Her bananas, we are afraid, will meet anything but a favourable reception. This is due to the fact that the "*Waikouaiti*" shipment of *Bananas, though apparently in beautiful condition when they arrived, were found to be black right through the core.* The ends had gone soft, and all those fruiterers who handled them have had a very anxious time, their customers returning the bananas and demanding the return of their money. We have carefully examined the fruit, and the Health Department here class it as a fungus disease, Naturally this is going to have a serious effect on future shipments. Buyers positively state that they will not again purchase Queensland bananas unless they get a guarantee that the fruit will ripen and open out in a satisfactory condition, therefore we are anxious to know how the "*Whangape*" shipment will turn out.

The Auckland (N.Z.) Market offers an excellent market to all Growers of

Mandarins, Passions, Oranges, Pines Etc.

By consigning to—

Radley & Co. Ltd.

Fruit and Produce Merchants

AUCKLAND, N.Z.

Growers will obtain Highest Market Prices.

Our large salesrooms cover 22,600 feet of floor space, and are right in the centre of the Auckland City Markets.

Growers have no need to prepay sea freight by shipping through Stephen McCormick, forwarding agent, Sydney.

Inquiries regarding N.Z. market will be gladly answered.

Address correspondence: **P.O. Box 665, Auckland.**

CABLES: "RADLEY AUCKLAND."

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Growers and Shippers of Australian Fruits

GRAPES, CHERRIES, PEARS, EARLY PLUMS, APRICOTS, CITRUS FRUITS OF ALL DESCRIPTIONS, PINES, PASSIONS, ETC., ETC.

Will find it to their advantage to ship their fruits direct to

REILLY'S CENTRAL PRODUCE MART LTD., Moray Place, Dunedin, N.Z.

Using the direct boat twice a month from Sydney, or every ten days from Melbourne.

REMEMBER WHO FOUGHT to have the duty on CITRUS FRUITS removed, and fought strenuously for better SHIPPING SERVICE between our respective countries.

We have the Most Central and Largest Saleroom in the South Island
A Staff trained to the Work. Our Advice is at your Service

Write or Cable - - "REILLY DUNEDIN" - - and Satisfaction is assured

FOOD AND MEDICINAL VALUES OF FRUIT.

How can we Advertise?

Suggestions for Newspaper Paragraphs.

That the consumption of fruit could be trebled to the advatage of grower, consumer, and all concerned, is freely admitted by all thinking men.

So far the way has not been discovered by which growers could share equally in the initial expense, for it is certain every grower would benefit by the campaign.

In the meantime, growers and all interested should endeavour to do as much educational and propaganda work as possible.

Here's an idea. Copy out the following paragraphs, and send them to your local paper, with a note to the Editor, requesting publication:—

FRUITS AS MEDICINE.

It is rather strange how few people know the medicinal value of our common fruits and vegetables. What a pity more fruits and fruit juices are not used, instead of the drugs and patent medicines! We find in the humble and much maligned prune one of the best, safest, and most pleasant tasting cathartics there is to be had. Nothing, excepting, possibly, Pineapple juice, is more soothing to sore and inflamed throats than the juice of canned Pears. For the parched conditions of tonsilitis, try slowly swallowing a spoonful of Pear juice. It gives instant relief, but must be repeated as often as the throat becomes dry. For a common case of sore throat, Pineapple juice is an excellent remedy in itself. Just eating a raw Pineapple without sugar is a great aid to digestion.

WHY DO CHILDREN LIKE FRUIT?

By the late Dr. Benjafield, Hobart (Tas.).

Because, with their infantile appetites, they crave for Nature's foods, which the Creator especially provides for His children. It would be equally sensible to ask why a bee loves honey?

The child craves for fruit because the demands of its body are satisfied with what the fruit provides in the most soluble and easily digested form.

The child wants sugar—here in the Apple, Pear, and other fruits, is sugar in its purest and most digestible form.

The child's rapidly growing bones need lime—here is lime in salts so easily assimilated that even the teeth can absorb them through their hard enamel.

The child wants acids to help digestion—here the sun has produced the most beautifully prepared acids, which have transformed the sap of the tree into this luscious sugary compound.

Thus, when the child eats an Apple or Pear, in the mouth saliva is increased, and the teeth are cleansed and nourished. In the stomach, the acids help to convert starch, meat, etc., into soluble food for the blood. In the blood, there are impurities, which it helps to expel; in the bowels, the cellulose prevents constipation.

Pulp of baked Apple is the best aperient for babies.

GIRLS SHOULD READ THIS!

What the Doctor said.

"Do you know what you are eating?" said the doctor to the girl.

"An Apple, of course."

"You are eating," said the doctor, "albumen, sugar, gum, malic acid, gallic acid, fibre water and phosphorus."

"I hope those things are good. They sound alarming."

"Nothing could be better. You ate, I observe, rather too much meat at dinner. The malic acid neutralises the excess of chalky matter caused by too much meat, and thereby helps to keep you young. Apples are good for the complexion. Their acids drive out the noxious matter which causes skin eruptions. They are good for your brain, which those same noxious matters, if retained, render sluggish. Moreover, the acids of the Apple diminish the acidity of the stomach that comes with some forms of indigestion. The phosphorous, of which Apples contain a larger percentage than any other fruit or vegetable, renews the essential nervous matter of the brain and spinal column. Oh, the ancients were not wrong when they esteemed the Apple the food of the gods—the magic renewer of youth. I think I will have an Apple," concluded the doctor.

FRUIT IS A NECESSITY, NOT A LUXURY.

The acids found in fruits are both untrients and germicides. The acids are also utilised as body fuel, the same as sugars; and in the process of oxida-

DON'T PLANT FRUIT TREES until you have seen the
PLANTERS' GUIDE
Containing Valuable Information for intending Fruit Tree Planters
Post Free to any address. Send now to the
Balhannah Deciduous Nurseries, Balhannah, South Australia
For your copy.
These nurseries are devoted exclusively to the propagation of Highest Grade Deciduous Fruit Trees, and can offer prime trees in all the leading commercial varieties Inquiries solicited. Business established over a quarter of a century.
H. N. WICKS, Proprietor

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H. Louey Pang
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Buying and Selling Fruit and Produce at this locality is as busy in the mornings as Western Market.
Good Prices Assured.
Cheques sent daily—immediately the consignment is sold.
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Bushel Fruit Cases
New, all Pine, Pine Ends, or all Hardwood
PRICES ON APPLICATION
O.T. Ltd.
CASE WORKS
Port Melbourne, Vic.

tion, they are converted into alkalies, thus increasing the alkalinity of the blood, which favours the elimination of uric acids and other acid and body wastes. The fruit acids also act as powerful antiseptics.

Lemon juice will destroy even cholera germs in a few minutes.

It has been demonstrated that Grape juice is destructive to typhoid germs.

Apple and Peach juice have a similar influence.

Aside from their value as germicides, all fruit juices are an aid in the digestion of albuminous foods, especially is this true of Pineapple juice, and are, therefore, especially recommended in cases of slow digestion, associated with a coated tongue and bad breath.

Some fruits are rich in iron, as the Strawberry.

The Apple is rich in phosphates.

Iron and phosphates are two very important food elements, and a meal can scarcely be said to be complete without fruit of some sort.

Acid fruits are always best eaten at the close of the meal.

WOOLLY APHIS.

An Effective Spray.

Speaking before the April meeting of the N.S.W. Fruitgrowers' Association, Mr. E. Ray, an orchardist in the Bathurst (N.S.W.) district, stated that he had had great success in ridding his Apple trees of the woolly aphis by adding a little caustic soda to the nicotine spray. He uses a spray made of about a condensed milk tin of "black leaf 40," 1lb. of caustic soda, to 100 gal. of water, with very satisfactory results. He also adds a little" black leaf 40" to the arsenate of lead spray that he applies prior to the pinking stage.

F. W. LANTZKE

Perth, W.A.

20 years' experience handling FRUIT and Vegetables on Growers' Account. Solicits consignments of Fruit, including Bananas.

Correspondence invited.

Address--

Stirling Street,

PERTH, W.A.

References: Bank of New South Wales.

STANDARD BOOKS

FOR THE

ORCHARDIST

The following is a list of Books of interest to all Fruitgrowers:—

Pruning Fruit Trees, by Geo. Quinn. Illustrated. Price, 4/6 posted.

Fryer's Insect Pests and Fungus Diseases of Fruit and Hops. An excellent work, containing 743 pages, 24 plates, mostly colored, and 305 other illustrations £2/6/- posted.

"Electroculture." The application of electricity to seeds in vegetable growing. By A. Carr Bennett. **5/3 posted.**

The Apple Tree. By L. H. Bailey. Illustrated. 10/4 posted.

Modern Fruit Marketing. A complete treatise, covering Harvesting, Packing, Storing, Transport, and Selling of Fruit. **8/6** posted.

The Fruits and Fruit Trees of America. The Culture, Propagation, and Management in the Garden and Orchard, and of Fruit Trees generally. By A. J. Downing. Illustrated. **29/9** posted.

The Horseman's Friend and Veterinary Adviser. By Prof. J. Law, V.S. Illustrated. **6/9** posted.

Success with Hogs. By C. Dawson. **4/10** posted.

Educating the Horse. By Prof. Lichtwark. Illustrated. **5/3** posted.

The A to Z of Australian Fruitgrowing. By H. J. Rumsey. **2/8** posted.

The Lateral on Deciduous Fruit Trees. By L. Macdonald, Dookie. Illustrated. **1/1** posted .

The Blood of the Grape. The Wine Trade Text Book. By A. L. Simon. **15/-** posted.

Manual of American Grape Growing. By U. P. Hedrick. **20/9** posted.

Tobacco Leaf. Its Culture and Cure, Marketing and Manufacture. by J. B. Killebrew. **15/10** posted.

Nut Growing. By R. T. Morris. **18/6** posted

Vinegrowing in England. By H. M. Tod. **2/5** posted.

Citrus Fruits. An account of the Citrus Fruit Industry, with special reference to California requirements and practices, and similar conditions. By J. E. Coit. **22/10** posted.

Strawberry Growing. By S. W. Fletcher. **14/4** posted, Interstate, **14/8.**

Productive Small Fruit Culture. A discussion of the Growing Harvesting and Marketing of Strawberries, Raspberries, Blackberries, Currants, Gooseberries and Grapes. By F. C. Sears. Illustrated. **15/3** posted.

Fruit Harvesting, Storing, Marketing. Practical Guide to the Picking, Sorting, Packing, Storing, Shipping, and Marketing of Fruit. By F. A. Waugh. **6/-** posted.

The California Fruits and How to Grow Them. By B. J. Wickson. **31/-** posted.

The Science of Eating. How to insure Stamina, Endurance, Vigor, Strength, and Health in Infancy, Youth, and Age. By Alfred W. McCann. **12/6** posted.

The International Poultry Book. The best Australian Guide to Successful Poultry Keeping. By Geo. Woodward. Illustrated. **6/11** posted.

The "Bouquet" Australian Flower and Garden Handbook. An illustrated Guide to Planning and Making the Home Grounds. By A. F. Cole. **2/8** posted.

Write us if the books you require are not mentioned above. Place your subscription with us for any British or Foreign monthly periodicals. All orders to be accompanied by remittances to

BOOK DEPARTMENT,

"FRUIT WORLD" PTY. LTD.,

9 Queen Street, Melbourne.

The "Lomas Excelsior" Fruit Grader *(Patented)*

A PRACTICAL MACHINE FOR PRACTICAL ORCHARDISTS

Efficiency, Durability, Speed.

THE EXCELSIOR GRADER is well named, as the fact of it being in constantly increasing demand proves that it has successfully stood the test of time.

Grades Citrus or deciduous fruits perfectly in any grades desired.

Does not clog or jam and does not bruise the fruit

Many hundreds of these machines are in use in Tasmania, where it was invented by a commercial orchardist.

References to leading growers all over Australia.

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F. CHILTON,
City Fruit Markets,
SYDNEY, N.S.W.
Sole Agent for N.S.W. and Queensland

MELBOURNE FRUIT SHOPS.

At the last meeting of the East Burwood Fruitgrowers' Association the following resolution was carried unanimously, viz:—"That the best thanks of this Association be accorded to Messrs. Everard, M.L.A., and R. E. Boardman for the strenuous efforts that they put forward to get the Act amended, and thus permitting the sale of fruit in city shops throughout the year, and hearty congratulations on their well-earned success."

A Definite Saving. You can save postage and the trouble of remitting annually by paying for the "Fruit World" in advance thus:—Two years' subscription, for 16/-; four years' subscription for 30/-.

FURRED TONGUE.

This is a sure indication that the stomach is out of order. Clean the tongue as far back as possible by rubbing with the tips of the fingers every morning, and thoroughly rinse out the mouth, Then take A.M.S. as directed. About thirty drops after every meal will bring about perfect digestion of food. A.M.S. being a perfect herbal compound, aids without enslaving the stomach. At all chemists and country stores at 3/- per bottle, by post, 3/6, or, if unprocurable, direct from T. A. Dickson, chemist, Geelong.

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Reliable Fruit Agents

23 Years' Experience

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Logs on their Way to the Mill

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The illustration shows some Mountain Ash logs on their way to the Victorian Hardwood Co.'s mills. Our cases are cut from this timber, which is light and dries out clean. Experts supervise the cutting. In addition Mountain Ash cases possess two features not common to the softwood case—Great Strength and Less Cost. Order now and avoid the height of season congestion. Case troubles mean loss of profit and inconvenience to you.

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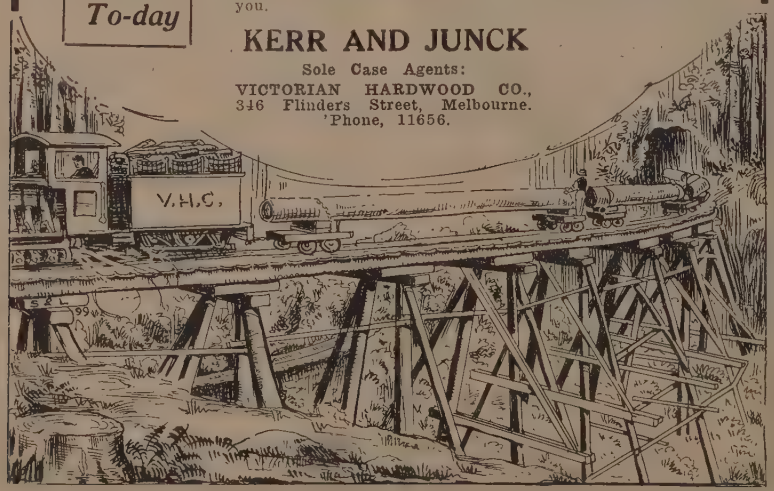

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Lime your land and spray your trees.

We supply the highest quality Scientifically prepared for the land and gives the best results.

Put up in bags, also in sealed tins to keep fresh for use in Bordeaux and other mixtures.

We also supply Lime and Cement for building purposes.

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TOMATO WILT, TOMATO BLIGHT, DOWNY MILDEW (on Grape Vines), CURLY LEAF (on Peach Trees).

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Numerous Testimonials.

Packets, 1/6 each (posted, 2/-). In Bulk—7 lb. lots or more—1/3 lb. (Postage or Freight extra).

Sole Proprietors and Distributors

LAW, SOMNER
(PTY. LTD.)
Seed Merchants and Nurserymen
139-141 Swanston Street, MELBOURNE

(*Continued from page* 359.)
season by cutting out any of the combs of brood in the box hive which are straight enough and fitting them into the frames. The pieces of comb are held in position either by means of string tied over the frame and comb, or thin splints of wood tacked to the frame. These temporary supports may be removed as soon as the bees have fastened the combs to the frame. It is seldom that more than two or three frames can be filled with brood from a box hive; the rest of the frames are supplied with starters or full sheets of foundation. As the bees become established on newly-built combs the frames of transferred comb are gradually worked to the outside of the cluster of bees, or put into the upper story over a queen-excluding honey board, and when all the brood is hatched out of them they are best withdrawn from the hive and melted for wax,

While this method saves most of the brood and transfers everything in one operation, it is a very messy one. There is always a risk of transferring disease to the new hive along with the brood or the comb, and the transference of brood and comb should therefore not be undertaken by anyone not possessed of the requisite knowledge and skill.

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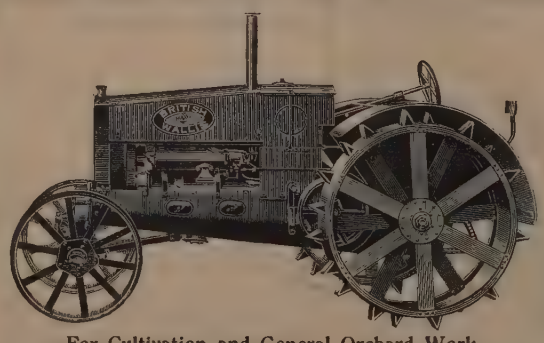

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RUNS ON ORDINARY KEROSENE
ENTIRELY GEAR DRIVEN
Awarded FIRST PRIZE and GOLD MEDAL by the Royal Agricultural Society of England, at their GREAT TRACTOR TRIALS.

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Established for the Co-operative Sale of Fruit and Produce.

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Representing
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All Sales conducted under the supervision of the management. We have our regular circle of buyers, and this, together with the service of our expert salesmen ensures highest prices to the grower.

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We have a special department organized for the Export Business, Liberal Advances made against consignments.

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CASES, WRAPPING PAPER, WOOD-WOOL, Etc., AND ALL ORCHARD REQUISITES supplied at lowest rates.

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A Concentrated Solution of Nicotine Sulphate in 10 lb. Tins.

Considerable Reduction.

Recognised by leading orchardists as the cheapest and most effective spray for

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Branches throughout N.S.W., and at Hobart, Launceston, and Devonport, Tas.

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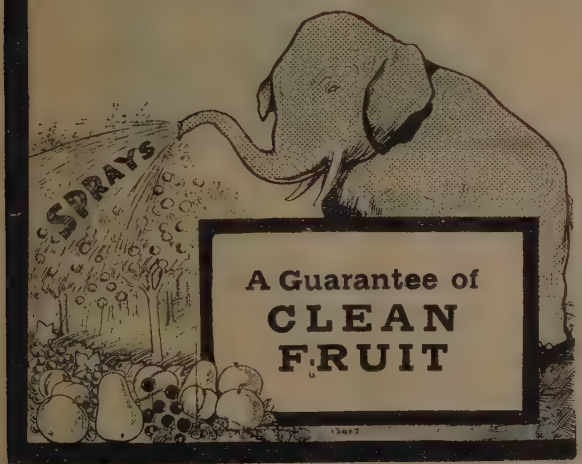

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When purchasing from an agent order "ELEPHANT" BRAND—See that you get it, and accept no other.

We guarantee that growers can add at least as much water to a gallon of

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THE QUALITY OF "ELEPHANT" BRAND STILL STANDS WELL ABOVE ALL OTHERS, AS DEMONSTRATED BY THE 1921 TESTS OF THE DEPARTMENT OF AGRICULTURE OF SOUTH AUSTRALIA. THE FINENESS OR SUSPENSION OF "ELEPHANT" BRAND ARSENATE OF LEAD, BEING FAR AHEAD OF ALL OTHER LOCALLY MANUFACTURED OR IMPORTED BRANDS.

ARE YOU A USER? IF NOT AT PRESENT, WHY NOT BECOME ONE? ONCE TRIED, ALWAYS USED!

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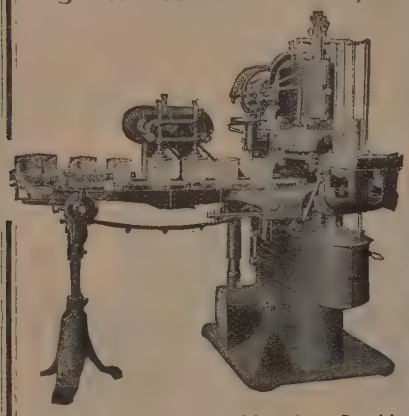

There is no spill, as the cans stand still while being double seamed.

There are more Max Ams Double Seamers in use than any other make.

With your inquiry send samples or accurate dimensions of your cans, and state daily output required also product to be packed

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Pay For Themselves

not only by reducing fuel and wages bills appreciably, and lubrication costs to a trifle, but also by saving the great loss in power that friction means. Increased production, greater safety, and economy are firmly established with the installation of SKF Ball Bearings.

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We specialise in profitable varieties: Fruit Trees of every description

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Established 31 Years

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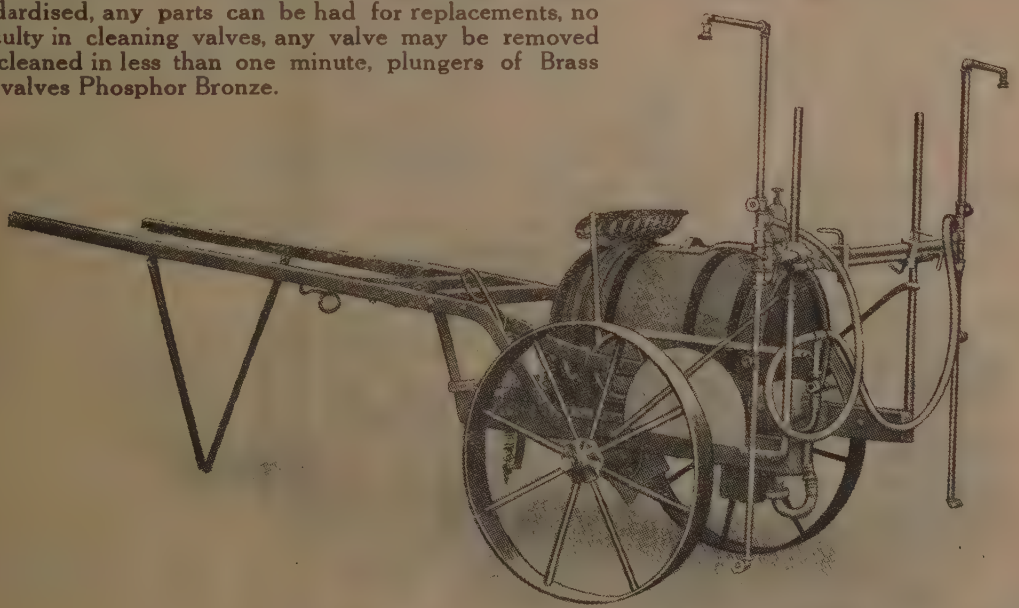

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Of QUALITY and PROVED EFFICIENCY, including

Arsenate of Lead in paste and powder forms.

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Powdery Mildew on Apples

and PROVED IN VICTORIA to be capable of controlling

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And Other Stone Fruits.

ATOMIC SULPHUR is the greatest boon ever offered to Fruitgrowers.

Agents wanted throughout Victoria.

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Opposite Spencer Street Railway Station

...FOR...

Bushel Fruit Cases

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and Cases of all descriptions

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Send to

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RECIPES FOR PREPARING DRIED PEACHES.

Specially Recommended.

Soak the Peaches for one hour in boiling water, to which has been added carbonate of soda at the rate of one teaspoonful to one quart of water.

Remove the skins, rinse the Peaches in cold water and place them in clean cold water to soak over night.

Drain off the water; make it into a syrup (one cup of sugar to two cups of water), bring to the boil and pour over the Peaches.

A Quicker Method.

Into a piedish place a small teaspoonful of carbonate of soda, pour in one pint of boiling water, drop in the Peaches, stir occasionally. After soaking for 20 minutes pour off water and rinse the fruit well in cold water in colander. Make a syrup (sweetened to taste), whilst boiling in saucepan drop in Peaches and simmer till tender.

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ADVANCES MADE for harvesting and packing expenses against ensuing crops at Lowest Rates of Interest and Commission.

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The highest market price and prompt returns.

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All fruit received, stored and handled under the Managers personal supervision.

If you are not a Shareholder in the Association write for full particulars.

Victorian Orchardists Co-operative Assn. Ltd.

456-458 Flinders Lane,
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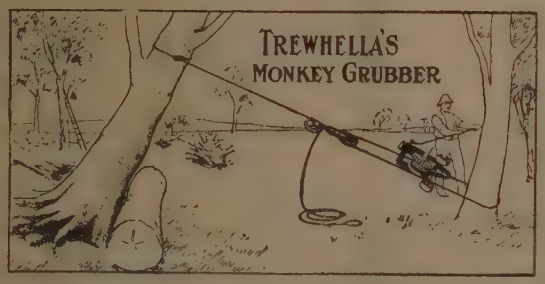
For Tree Pulling and Stump Grubbing

use the Powerful

TREWHELLA "MONKEY" GRUBBERS



Read what a satisfied orchardist who has used our machine says about them:

Mr. F. Pinkstone, Mangrove Mountain, N.S.W.—

"I can recommend all orchardists and farmers, where clearing is heavy, to purchase a "Monkey" Grubber. Since I bought my machine, myself and my brother (aged 16) have completed much clearing. For the past two months my brother has been pulling timer for neighbours by day labour. He has pulled 66 trees in one day, ranging from 8in. to 2ft. 6in. Those knowing Gosford timber, comprising peppermint, bloodwood, red-gum, ash and stringy-bark will appreciate what this really means. Wher a lad of 16 can with a machiue, pull on an average an acre in two days (cost of clearing here being from £12 to £20 per acre), need I give any further recommendations? The machine has paid for itself many times over in six months." This is one of many apprcciations received from satisfied users.

Trewhella "Monkey" Grubbers and "Wallaby" Jacks helped thousands of people to save thousands of pounds. WHY NOT YOU?

VISIT US AT THE ROYAL SHOW, STAND 91, SMITH STREET.

Write for Catalogue to TREWHELLA BROS. PTY. LTD. TRENTHAM, VICTORIA

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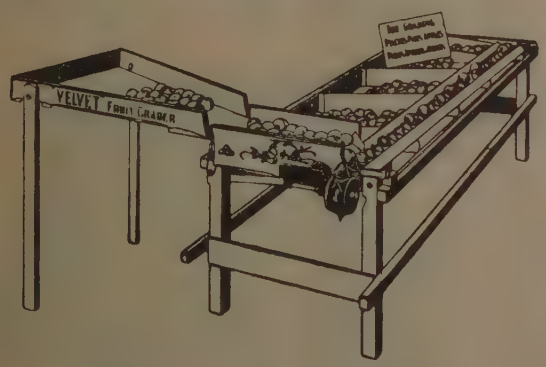

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FRUIT GRADER

Suit Hand or Power

NO EXTRA FITTINGS REQUIRED

Can be supplied complete as shown with 5 Bins, or as a Unit
Unit consists of plain Belt and Rails, with Feed Box, Driving and carrying Gear. **Price £13-5-0**
Feeding Box, fitted with Positive Feeding Conveyor **£3-15-0**

GIVES YOU: Bigger Capacity per day. Complete absence of Bruising. More Uniform Grade Better Market Prices. Satisfied users in all States. Grades Flat Fruit equally well by using Special Belt at small extra cost.

THIS GRADER IS NOT A TOY.

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With branches at **Liverpool, Glasgow, Hull and Paris.**

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AUSTRALIAN FRUITS

We sell by PRIVATE TREATY direct to large multiple restaurants, and leading hotels, and through all other sources that will return HIGHEST PRICES to the shippers. :: ::

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—"SUN"-LIGHT

—puts all others in the shade. Its illumination is as bright as electric light, but less expensive; it has no intricate system of underground pipes to get out of order, for each lamp is self-contained.

"SUN"-LIGHT IS LOW IN FIRST COST, UP-KEEP BUT 1d. PER HOUR PER LAMP

Write us for further particulars.

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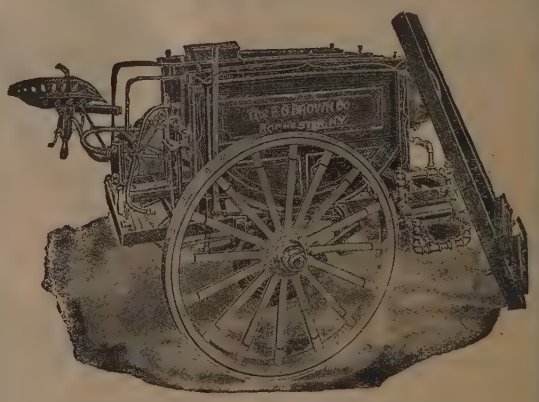

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No engine is needed
the horses do the work.

The "BUZACOTT" AUTO-PRAY No. 15

Sprays evenly and efficiently. The axle turns with the wheels, and moves a simple eccentric which governs the pump.

Write and ask us all about it.

Buzacott & Co.
LIMITED

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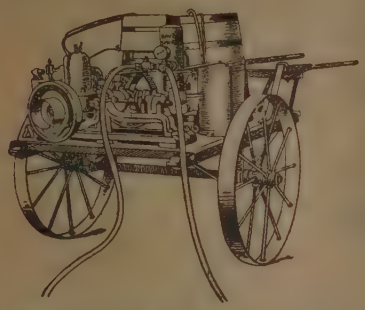
And at Adelaide Street, Brisbane.



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IS THE

PIONEER AUSTRALIAN POWER SPRAYER

and has held its own against all comers for the past 14 years

RUSSELL & CO., *Makers*

BOX HILL, MELBOURNE

ASK FOR CATALOGUE POWER and HAND SPRAYERS

Read what Satisfied Users of the BAVE-U have to say

Extract from letter, E. Swan, Londrigan.

"I thought you would be interested to know how I have got on with the new pump. We have just finished our Winter wash on the whole orchard, 7,000 gallons of lime sulphur and 500 gallons of oil, and the pump ran without any trouble whatever. I consider it about perfection in spraying ou fits. The old pump which was purchased 8 years ago is just as reliable and as good as new now. Wishing you the success you deserve with your Sprayers."

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"I am doing all sorts of work with engine of Sprayer, sawing wood and pumping, and it has done very good work and no trouble."

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South Australia: Premier Machinery Co.
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Don't be downhearted Son!
Use Neptune Spraying Materials they Kill all orchard pests.

NEPTUNE PREPARED RED SPRAYING OIL.
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Send your surplus to us, watch our market, or, better still, let us cool store your fruit and watch prices for you; but, if possible, arrange with us early.

Prompt returns a speciality.

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FRUIT EXPORTERS, IMPORTERS, AND SALESMEN,

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"For more than a quarter century this firm has been building up a world-wide reputation for honesty and fair dealing, and is now determined to keep it." "Every salesman and assistant has been cradled in the trade. No amateurs or apprentices."

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"Fumigation is too slow and costly. Specific sprays do it better for less. Results within 24 hours and costs only 6d. a tree. Non-poisonous, non-injurious, nourishes the tree, destroys oidium, woolly aphis, tomato blight, scale, spider, and all leaf-eating insects."

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No. 1004 E.P. is one of the latest and simplest combinations in the IRON AGE Harrow line. High steel frame, diamond-shaped steel teeth with cultivator points forged on one end and hardened, adjustable for depth and angle as shown in Fig. 21. Steel clamp expander opens to 36 ins. and closes to 11 ins. Can also be furnished with lever expander, with either plain or lever wheel; with wide flat sweep (Fig. 86) for middle bar; with special side holes for working close to young plants; and with special steel fenders to protect the plants.

Complete with Lever Expander and plain wheel—

£5/15/-

Fig. 21. Showing adjustment of teeth on No. 1014

Fig 86

A wide, flat sweep, on a high arched, adjustable standard, to be attached to near end of middle.

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No extra Fittings to grade different varieties of Fruit

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Overhead Driving Chain. Effective Cooling Station.

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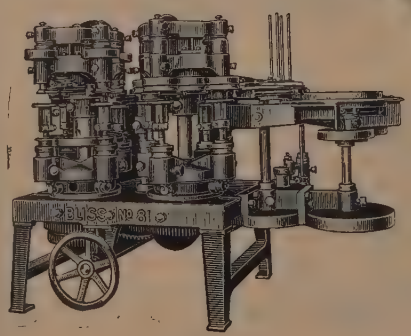

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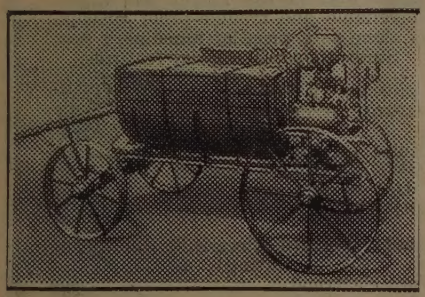

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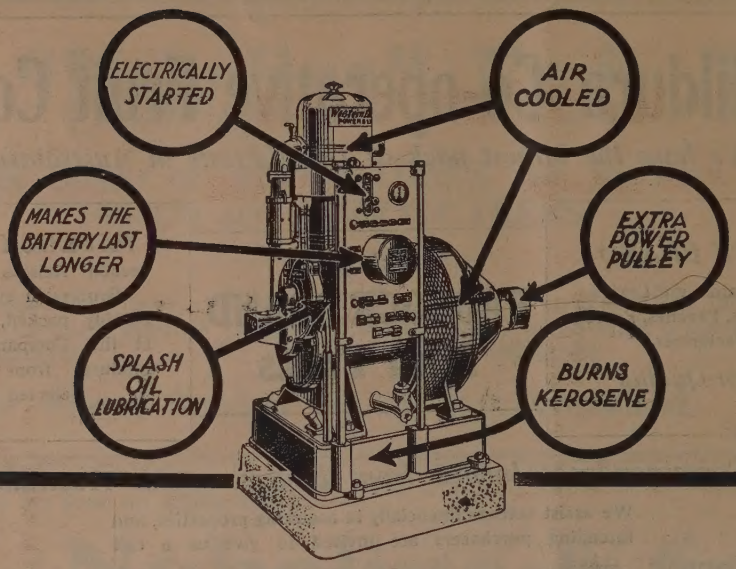

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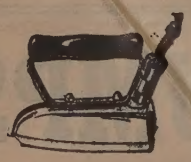

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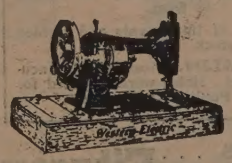

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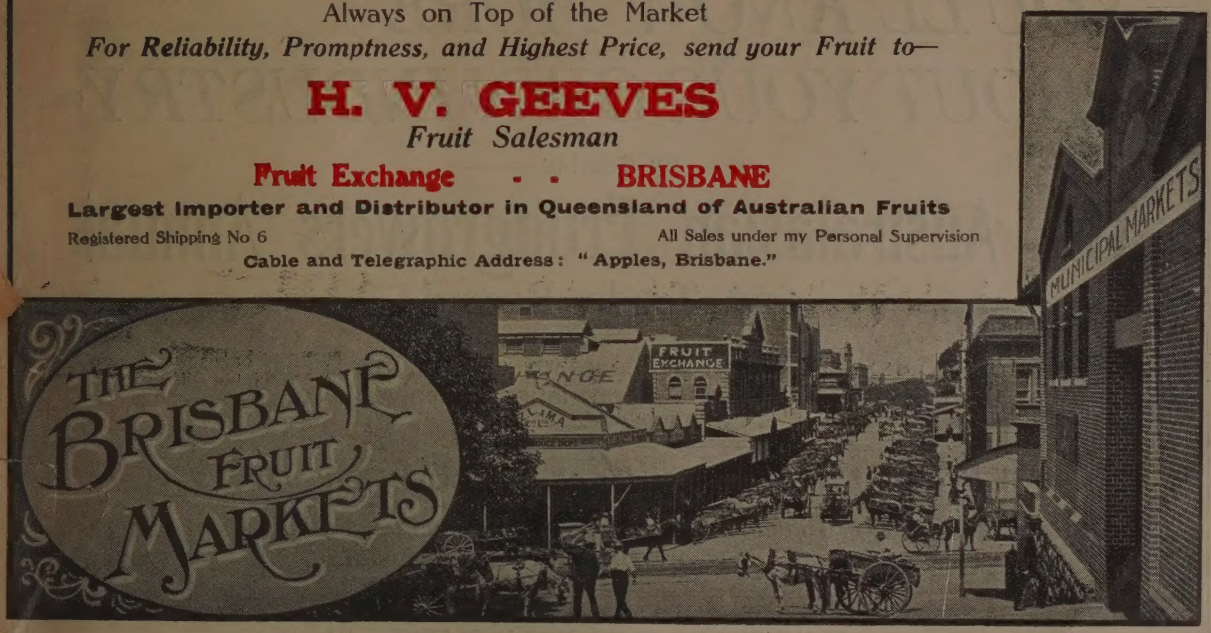

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